SPIRITUALITY, GRIT, AND GRADUATION:

EXAMINING PERSISTENCE AT A PUBLIC UNIVERSITY

A DISSERTATION

SUBMITTED TO THE GRADUATE SCHOOL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE

DOCTOR OF EDUCATION

BY

KAREN M. HANSEN-MORGAN

DISSERTATION ADVISOR: ROGER WESSEL

BALL STATE UNIVERSITY

MUNCIE, INDIANA

DECEMBER 2017

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BALL STATE UNIVERSITY
MUNCIE, INDIANA
DECEMBER 2017

ABSTRACT

DISSERTATION: Spirituality, Grit, and Graduation: Examining Persistence at a Public University

STUDENT: Karen M. Hansen-Morgan

DEGREE: Doctor of Education

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This study examined persistence to graduation at a public Midwestern university from the perspective of the constructs of spirituality and grit, using historical demographic, academic, and survey data from nine cohorts of students. Significant correlation between spirituality and grit was found, leading to the development of the SPIRIT theory and working model. Significant correlation between spirituality, grit, and persistence to graduation was also found, and the SPIRIT theory was applied to persistence to graduation, accounting for both progress towards the graduation goal, as well as for times when some cohorts showed negative correlation for some factors. Development of the SPIRIT theory offers insights into the psychological attributes that have been identified by previous scholars as relevant to persistence to graduation.

DEDICATION

This dissertation is dedicated to my parents, Einar Ingvald Hansen and Lorna Joyce Durrant, and to my more distant ancestor, Edwin Smith Hinckley (one of the founding fathers of Brigham Young University), who modeled the importance of education to me at an early age. It is also dedicated to all the women in my family and in my life, past and present, who taught me directly and by example, of what it meant to follow your dreams and to be a *strong woman.* Finally, it is dedicated to the memory of my son, Michael Joel Morgan, who through his short life, taught me how to keep going despite what appeared to be insurmountable obstacles. His SPIRIT inspired me to persist.

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CHAPTER 1:

INTRODUCTION

As institutions of higher education are increasingly scrutinized over their ability to retain students through graduation, many educators feel an increased sense of social responsibility to those students to understand their persistence stories and to address their needs (Baxter Magolda & Crosby, 2011; Braxton, 2000; Habley, Bloom, & Robbins, 2012; Melguizo, 2011; Tierney, 2000; Tinto, 2012; Wawrzynski & Pizzolato, 2006). Administrators at universities have been pressured to improve their graduation rates to retain funding from government agencies, which ultimately corresponds to the persistence of students (Alexander, 2000; Gedeon, 2013; Kofler, 2012; Ordway, 2012; Ryan, 2004; Shin & Milton, 2004; Titus, 2006; Zhang, 2009). Non-academic aspects of persistence have increasingly been included in the discussions of how to improve student persistence through graduation (Ishitani, 2006; Pascarella & Terenzini, 1998; Reynolds & Weigand, 2010; Scott, Bailey, & Kienzi, 2006; Torres, Jones, & Renn, 2009).

Marketing research has shown that getting new customers can cost up to 10 times as much compared to keeping existing customers (Delen, 2010). At universities, this phenomenon is known as persistence or retention. Persistence is generally discussed from the perspective of the student side of the two-sided coin of staying in college; retention is the view from the institutional side (Chang, 2014; Habley et al., 2012). The ability of a university to retain its students through graduation has an impact on its finances, its reputation, and its ability to obtain accreditation. Therefore, persistence/retention is of critical concern to higher education institutions.

The Office of Institutional Effectiveness at Ball State University conducted an analysis of student data in 2012-2013 to identify factors contributing to student retention at the University.

Although the primary factors consisted of students' completed credit hours and GPA, the analysts also identified several contributing precursor factors (Knight, Morgan, & Costomiris, 2013). One of these was spiritual engagement, a factor that was derived from a bank of survey questions included in the National Survey of Student Engagement (NSSE), a survey that is conducted approximately every three years at Ball State. Spirituality and spiritual engagement among college students have become topics of increased interest to researchers who are seeking to understand this phenomenon. The number of studies related to college students and spirituality and religiosity has burgeoned over the last 20 years. The most well-known of the research studies into this phenomenon was a longitudinal study into spirituality in college students conducted from 2003-2010 by the Higher Education Research Institute (HERI) located at UCLA (Astin, Astin, & Lindholm, 2011a, 2011b). Tisdell (2003) and Chickering, Dalton, and Stamm (2006) found that as individuals internalized their spirituality, they developed a more authentic identity and a sense of wholeness that had not existed before. The connection between spirituality and identity development, which has long been identified as a contributing factor in students' academic success in college (Chickering & Reisser, 1993, Tierney, 2000; Zhang, 2009), is one that deserves to be explored.

Other studies have examined student persistence and retention using other variables. Recently, researchers have examined a variable they call grit, which has been defined as "perseverance and passion for long-term goals" (Duckworth, Peterson, Matthews, & Kelly, 2007, p. 1087), and have correlated it to academic persistence and success. Zhivotovskaya (2009) reported that Duckworth and Seligman's research in 2006 showed the "correlation between self-discipline and achievement was twice as large as the correlation between IQ and achievement" ("Grit," para 1). Characteristics of grit included "behaviors such as not being discouraged by

setbacks, maintaining focus on a project, being a hard worker, completing tasks, and being diligent" (Chang, 2014, p. 2). It has elsewhere been described as the ability to regulate self-control, to have stamina and maintain focus in pursuit of a goal despite "failure, adversity, and plateaus in progress" (Duckworth et al, 2007, p. 1088).

In examining my own story of persistence (Latz, Carey, Cox, Kent, & Morgan, 2013), I discovered that I sought out spiritual guidance for direction in my educational path. I was determined to follow what I thought was God's path for me, which meant finishing my degree, no matter how long it took. This attitude is one that researchers now call grit, and was largely driven by the direction I derived from my spiritual path. As I pondered the connections I found between spirituality and grit, I began to wonder about the possibility of a theoretical connection between these two constructs. Spiritual struggle often seemed to develop a deeper drive in people; might it contribute to a deeper drive to persist in college?

Problem Statement

The overarching problem that this study examined was persistence through the achievement of a four-year undergraduate degree from the perspective of the constructs of spirituality and grit (for the purposes of this discussion, the terms spirituality, religiosity, and spiritual engagement will be truncated to spirituality despite acknowledged nuances of meaning and measurement between the three constructs), and the development of a theory about the intersections and interactions of spirituality and grit, and their influence on persistence. Studying persistence is important because as funders of higher education (federal, state, local government, private donors) increasingly scrutinize the outcomes of their funding recipients, they are paying greater attention to the graduation rates of students attending college. Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008) reported that as few as 51% of students who enrolled in institutions

completed degrees within six years at the institutions where they started. When transfer students were included, the rate of six-year completion was slightly higher (56.1% in 2013); however, pressure is being placed on institutions to improve graduation rates or lose funding (Gedeon, 2013).

For example, starting in 2013 the Board of Governors for Florida universities began "awarding tuition increases based on how well they do in areas such as graduating students" (Ordway, 2013, para 3.). Kofler (2012) reported that the Texas Association of Business, the largest business organization in Texas, was pushing the legislature to pass similar requirements for its state universities. In July 2015, the National Conference of State Legislatures (NCSL) reported that 32 states have "a funding formula or policy in place to allocate a portion of funding based on performance indicators, such as course completion, time to degree, transfer rates, the number of degrees awarded, or the number of low-income and minority graduates" ("State Activity," para. 1). Five additional states were in the process of transitioning to performance funding.

While institutions focus on how well they retain a student through graduation, from the student perspective of persistence, various factors impact their ability to stay enrolled through graduation—which may or may not be important to the institution. However, as institutions are made aware of various persistence factors, they may be better equipped to address those factors, and work with students to improve the retention-persistence landscape. Every student who graduates, regardless of the factors contributing to persistence/retention, makes a difference in the institution's performance—particularly where some rates are in the single or low-double digits. Ordway (2013) observed that Florida A&M reported that only 12 percent of entering freshmen graduated in four years. Additionally, persistence has been included as a performance-

based funding measurement (NCSL, 2015); for example, both Indiana and Illinois specifically mention persistence as one of the metrics upon which funding decisions are based.

Purpose

The purpose of this study was to conduct an analysis of the constructs of spirituality and grit, and their relationship to each other, and to persistence through graduation at a public university (see Figure 1), and to theorize about the relationship and interactions between spirituality and grit on each other, and on the persistence phenomenon. It used descriptive, correlational, predictive, and content analyses in its analytical approach. From the quantitative perspective, Hedrick, Bickman, and Rog (1993) claimed that descriptive analyses "provide a picture of the phenomenon" (p. 44) and are appropriate to use when asking questions about correlation and relationships. Creswell (2014) argued that correlational design approaches allow researchers to "describe and measure the degree or association (or relationship) between two or more variables" (p. 12). This approach allowed for the manipulation and analysis of large data sets to answer the research questions addressed by this study. Further, and from the qualitative perspective, content analysis of open-ended items supplemented the quantitative analyses and contributed to theory development. The study used historical and survey data collected by various offices of the university including Admissions, Academic Advising, and Records, and maintained by the university's Office of Institutional Effectiveness, and comprised a secondary data analysis of previously collected data. Figure 1 illustrates the research questions posed by this study: what is the relationship between and interaction of the constructs of spirituality and grit, and does this relationship and interaction have an impact on persistence to graduation from college with a four-year degree?

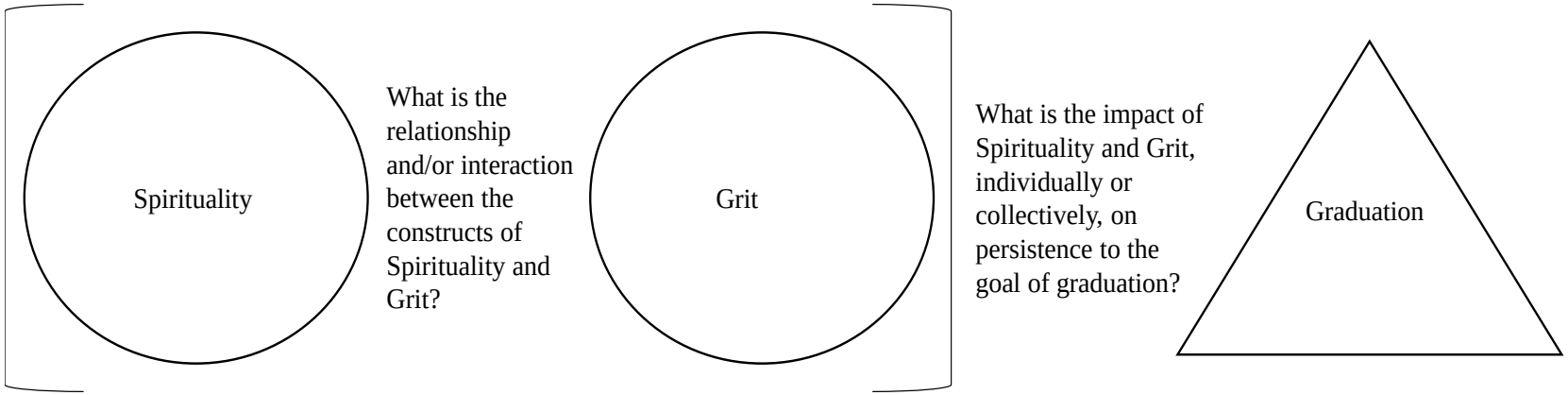


Figure 1. What is the relationship between and interaction of spirituality and grit, and what is their impact on persistence to graduation?

Rationale and Significance of the Study

Despite over 70 years of studying persistence/retention at universities, Braxton (2000) pointed out that the rate of student departure had remained remarkably stable at around 45% of students for over 100 years. Habley et al. (2012) noted that multiple variables impact student success, and that each institution must address its specific mix of culture and students to be successful in its programming. Regardless of how prepared students are when they arrive on campus they must exhibit "behaviors and develop personal characteristics that contribute to persistence . . . [and] identify and commit to a plan of study that is congruent with interests and abilities" (p. xv). Braxton called for an integrated model that included economic, organizational, psychological, and sociological variables, building and expanding upon Tinto's (1993) interactionalist theory and model. Tinto (2012) updated his model and stipulated that institutions should address four conditions that have been shown to be "associated with enhanced student retention" (p. 7). These include expectations (student and institutional), support (academic, social, and financial), assessment and feedback, and involvement (academically and socially). DeAngelo, Franke, Hurtado, Pryor, and Tran (2011) from the Higher Education Research Institute (HERI) published results from their longitudinal study of student graduation, listing several strong predictors of degree attainment, including emotional health (often associated with spirituality) and drive to achieve (often referred to as grit).

While the study of spiritual things has been a historical part of most college curricula, starting with Harvard, this connection in public education has gradually been lost. Chen, Dalton, and Crosby (2006) claimed that "by the 1960s, most colleges and universities in the United States . . . had adopted a secular orientation that relegated matters of faith and religion to the private realm of students' lives" (p. 47). However, as Chen et al. noted, an increase in interest in

spirituality among college students has triggered "students' expectations that institutions should take a more active role in making religion and spirituality a more integral aspect of the college experience" (p. 47). Jablonski (2001) devoted an issue of *New Directions for Student Services* to student spirituality, following the argument of Love and Talbot (1999) that "student affairs professionals must understand the role that such values as faith, hope, and love play in . . . developmental processes of students" (p. 362).

Montgomery-Goodnough and Gallagher (2007) conducted a review of research on spiritual and religious formation in higher education, and called the current movement a "paradigm shift in an engaged and questing generation that is overtly spiritual" (p. 64). Further, Subbiondo (2006) pointed out the "escalating number of global conflicts" that have been related to religious and spiritual differences, and called for increased attention by higher educators to address issues of the day by including curricular and co-curricular programs that "model interfaith inquiry and dialogue" (p. 20). Similarly, Keeney (2012) bemoaned the state of higher education as a place for "job-training" (p. 21) and called for a place where students could once again address questions of "how one ought to live" (p. 22). Since Subbiondo's call, many researchers (e.g., Astin et al., 2011a, 2011b; Craft & Bryant, 2011; Magolda, 2013; Nash & Swaby, 2011; Zhang et al., 2014) have explored the role spirituality plays in college student lives.

Grit has also been associated with student persistence. Komarraju, Karau, and Schmeck (2007) found that "specific aspects of personality, such as grit, sociability, and emotional stability, are important influences on academic achievement" (p. 50). Allen (1999) found a strong desire to complete college contributed to persistence to graduation. Characteristics of grit include "behaviors such as not being discouraged by setbacks, maintaining focus on a project,

being a hard worker, completing tasks, and being diligent" (Chang, 2014, p. 2). It has elsewhere been described as the ability to regulate self-control, to have stamina and maintain focus in pursuit of a goal despite "failure, adversity, and plateaus in progress" (Duckworth et al., 2007, p. 1088). Yeager, D'Mello, Paunesku, Spitzer, and Duckworth (2013) found that grit became operational in creating persistence to a goal even when the tasks to reach that goal appeared inconsequential, so long as the individual perceived the goal itself as worthwhile, and developed a strong desire to achieve the goal. Cooper (2014) explored non-cognitive factors associated with success in first and second-year college students, and found that grit was positively associated with self-efficacy, another factor in persistence.

While many studies have been made of the relationship between spirituality and persistence and grit and persistence, there are no studies looking at whether there is a relationship between spirituality and grit, or the combination of those two and persistence. However, when reviewing the research in both areas, many of the findings describe spirituality and grit in similar terms. For example, Vela, Lu, Lenz, and Hinojosa (2015) found that "the presence of meaning in life, search for meaning in life, hope, and family importance influenced 128 Latina/o college students' psychological grit" (p. 287). Parks (1986) claimed that the presence of and search for meaning in life constitutes spirituality. Van Hook (2013) claimed that spirituality "can strengthen resiliency by promoting a sense of coherence, hope, transcendent beliefs that promote a sense of meaning, and social support within a spiritual community" (p. 3). Resiliency is an aspect of grit included by Chang (2014) who claimed that it is a behavior that could be described as "not being discouraged by setbacks" (p. 2). Finally, Bean and Eaton's (2000) Psychological Model of College Student Retention (see Figure 3 in Chapter 2, Literature Review) of

psychological interactions within the institutional framework offered several points of intersection where attributes of spirituality and grit could come into play.

Therefore, this study sought to understand whether an interrelationship might exist between spirituality and grit which could theoretically contribute to stronger persistence patterns in the undergraduate experience. Accordingly, examining the constructs of spirituality and grit in relationship with each other and in the context of their contribution to undergraduate student persistence to graduation may bring greater understanding to aspects of persistence previously unstudied, and help to develop theory about a relationship between spirituality and grit as persistence factors.

Research Questions

This study proposed to examine the following research questions:

RQ1: Is there a relationship (correlation) between spirituality and grit in college students?

RQ2: Do the constructs of spirituality and/or grit correlate with persistence to graduation?

Supplemental Q1 to RQ2: Do the constructs of spirituality and/or grit contribute to a higher predictive model for persistence to graduation?

Supplemental Q2 to RQ2: Do the constructs of spirituality and/or grit correlate with or contribute to a higher predictive model for GPA at graduation?

RQ3: How often do students attribute their persistence to graduation success to the presence of spirituality and/or grit in their college experience?

Hypotheses

The following hypotheses are derived from the research questions:

H_1: Spirituality and grit positively correlate in college students.

H_{1Null}: There is no correlation between spirituality and grit in college students.

H_2: Spirituality and grit significantly correlated ($p < .05$) with persistence to graduation.

H_{2Null}: Neither spirituality nor grit correlate significantly with persistence to graduation.

Supplemental$Q1H_{2:}$ Spirituality and/or grit contribute to a higher predictive model of persistence to graduation (beyond traditionally used academic models).

Supplemental$Q1H_{2Null}$: Neither spirituality nor grit contribute to a higher predictive model of persistence to graduation.

Supplemental$Q2H_{2:}$ Spirituality and/or grit correlate with and contribute to a higher predictive model GPA at graduation (beyond traditionally used academic models).

Supplemental$Q2H_{2Null}$: Neither spirituality nor grit contribute to a higher predictive model of GPA at graduation.

Definitions

The following section briefly defines terms as they were used and understood in this study. An expanded discussion of each is found in the Literature Review chapter.

Persistence

Persistence as it related to college students is traditionally considered to be "a student who enrolls full-time, continuously pursues a degree with the expectation of graduation in about four (or two) years" (Habley et al., 2012, p. 4), although it has alternatively been viewed as a person who "goes on resolutely or stubbornly despite opposition, importunity, or warning: to continue firmly or obstinately" (p. 4). For the purposes of this study, it is viewed as the achievement of a four-year degree from a public university regardless of the time taken to reach that achievement.

Retention

Retention is the institutional experience of students persisting through their studies to achieve a specific academic objective. The first line of retention is measured in the freshman year; that is, did the student register for courses the second semester, and did the student return for the sophomore (and continuing) year(s)? The second measurement of retention is whether the student continues to the point of graduation. Oftentimes the terms persistence and retention are used interchangeably, however it is worth noting that persistence is generally considered in terms of the student perspective, and retention from the institutional perspective (Habley et al., 2012; Tinto, 2012).

Student Development

Student development has been defined as the growth process that enables the student to respond to life challenges, to "integrate and act on many different experiences and influences" (Evans, Forney, Guido, Patton, & Renn, 2010, p. 6). It has elsewhere been described by Rodgers (1990) as "the way that a student grows, progresses, or increases his or her developmental capabilities as a result of enrollment in an institution of higher education" (p. 27). The American Council on Education's (ACE) 1937 and 1949 statements both defined student development to include all aspects of the student's life, or the "whole student" (1937, p. 3). Student development is considered integral to the ability of a student to persist through college to the point of graduation (Habley et al., 2012).

Non-Cognitive Factors of Student Development

Non-cognitive factors of student development are generally considered all those characteristics of development that do not involve cognition or learning. These include, but are not limited to, emotional, physical, environmental, and psychological factors (Baxter-Magolda,

1999, 2004a, 2004b, 2009; Chickering & Reisser, 1993; Habley et al., 2012; Kegan, 1982, 2000: Pascarella & Terenzini, 1991; Perry, 1984; Tinto, 2012). Spirituality and grit fall within the purview of non-cognitive factors of student development (Duckworth et al., 2007; Parks, 1986, 2011).

Spirituality

Moberg (2002) claimed that spirituality is a hard construct to measure, citing one study that found 35 different measurements related to spirituality. That study grouped spirituality into three categories defined as theological interpretations, anthropological approaches emphasizing "human nature and experience" (p. 48), and "historical-contextual approaches that accentuate experience rooted in a particular community's history" (p. 48). Farias and Hense (2008) suggested that people who score high on spirituality scales may be psychologically different than those who score lower, and it is those observed psychological differences that give us a better understanding of what we are measuring as spirituality. Dalton, Eberhardt, Bracken, and Schols (2006) distinguished between religious spiritual search (within the confines of a religious structure) and secular spiritual search (outside a religious structure). Within those, they identified four types of seekers: faith-centered, interfaith, mindfulness, and wellness. They also differentiated between those who preferred activities that occurred in solitude versus social settings. Tisdell (2003) identified seven assumptions related to spirituality, and emphasized that spirituality and religion are not the same, but that "for many people they are interrelated" (p. 28). This underscores the points made by Moberg and Dalton et al. Spirituality is often conflated with religious practice; however, for the purposes of this study, it is based on respondent self-report data. In other words, if a respondent reported participating in activities to enhance spirituality or to have deepened spirituality, that was considered spirituality, regardless of how

the individual personally defined it. Participating in such activities has also been described as spiritual engagement.

Spiritual Engagement

Spiritual engagement as defined by the National Survey of Student Engagement (NSSE) (2016b) included participation in a variety of activities, including worship, meditation, and prayer. For this study, the NSSE items "wrshp5" and "gnspirit" that report students' spiritual engagement were used as an indicator of spirituality. Wrshp5 consisted of the response students gave to the question, "During the current school year, about how often have you done each of the following? Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)" (NSSE, 2016b, Item 6c). Gnspirit consisted of the response students gave to the question "To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality" (NSSE, 2016b, Item 11p). Other questions related to developing independence and participating in discussions related to religious beliefs were also included for some cohort years. In a few cohorts *Mapworks* (BSU, 2016d) also asked questions related to spiritual and religious participation, and these were included as measurements of spirituality for this study. The questions used to measure spirituality for each cohort are included in Appendix A, Tables A1-A9. Further, a question was added to the Ball State University Senior Survey for students to identify the things they felt had contributed to their persistence, with spirituality-related terms among the list of items. The full content of this question is included in Appendix B.

Grit

Grit has been defined as a combination of several variables related to motivation, determination, and self-control (Duckworth et al., 2007). It has also been described as an ability

to self-regulate and maintain focus in pursuit of a goal despite failure. For this study *Mapworks* factors were used as the primary measurement of grit. While *Mapworks* added a grit factor in 2013 (Timmerman, 2014), most of the data used in this study predated the existence of a specific factor for grit, so all factors that included survey questions addressing tangential characteristics comprising grit were used to define grit within this study. For some cohort years, NSSE asked questions related to working hard which is often associated with grit, and has been included in this study as an additional measure of grit. Further, the question added to the Ball State University Senior Survey where students could identify the things they felt had contributed to their persistence included grit (and related terms) among the list of items, and is included in Appendix B. Again, student self-reporting was used to determine levels of student grit.

Researcher's Perspective

The researcher's subject position with respect to this study is one of deeply ingrained religious faith, membership, and practice in The Church of Jesus Christ of Latter-day Saints (Mormon). At times, this provided the researcher with insider information about specific religious beliefs. At other times, this made the researcher an outsider due to differences in religious beliefs. However, the researcher's training in religious studies—over 35 years of teaching in Church organizations—enabled her to understand the language often used to describe spirituality and related concepts.

Next, as indicated previously, the researcher's experience as an undergraduate student led her to make a personal connection between her spiritual beliefs and her grit as contributors to her persistence through the seven years it took her to graduate. Thus, as a student who managed to graduate outside of the scope of the current expectations of four-to-six-year graduation as a success measurement for universities, as well as a non-traditional student who returned to

graduate school in her fifties because she felt spiritually guided to do so, she was well-acquainted with the way spirituality and grit have been operational in her own education, and had a sense that there are links between these that should be explored in order to better understand the interrelationship she perceived to exist.

Further, the researcher was interested in the perspectives of the undergraduate students themselves, which led to framing this study from the persistence viewpoint. She was also interested in discovering explanations for whether and how beliefs drive action, which placed her in the pragmatic camp of philosophical worldviews, and in a theory-development approach to this study.

Summary and Organization of the Proposal

In an environment of increased scrutiny of higher education institutions' ability to retain students through graduation, and to improve graduation rates, administrators search for answers to the relatively firm 45 percent rate of student departure over the last 100 years of record-keeping (Alexander, 2000; Braxton, 2000; Gedeon, 2013; Kuh et al., 2008; Ordway, 2012; Zhang, 2009). Non-academic aspects of persistence have increasingly been included in this search for answers (Pascarella & Terenzini, 1998; Reynolds & Weigand, 2010; Torres et al., 2009). Braxton (2000) called for an integrated model that included economic, organizational, psychological, and sociological variables. Of these variables, both spirituality and grit have received increased attention over the last decade, as researchers separately explored the role these constructs have played in student success in college (Astin et al., 2011a, 2011b; Chickering et al., 2006; Chickering & Reisser, 1993; Duckworth et al., 2007; Tierney, 2000; Tisdell, 2003; Zhang, 2009; Zhivotovskaya, 2009). DeAngelo et al. (2011) reported on several strong

predictors of degree attainment, including emotional health (often associated with spirituality) and drive to achieve (often referred to as grit).

Further, many of the findings described spirituality and grit in similar terms. Vela et al. (2015) found that having a sense of meaning in life influenced college students' grit, pointing to Parks' (1986) assertion that the presence of and search for meaning in life constitutes spirituality. Moreover, Van Hook (2013) claimed that spirituality strengthened resiliency, which suggests Chang's (2014) inclusion of resiliency as an aspect of grit. Therefore, this study examined the constructs of spirituality and grit in relationship with each other, and in the context of their contribution to undergraduate student persistence to graduation, and to develop theory about whether a relationship between spirituality and grit exists and could potentially be a stronger contributor to student persistence when considered together rather than separately.

This dissertation is organized into five chapters. Chapter one (this chapter) included the problem statement, purpose, rationale and significance of the study, the research questions, related hypotheses, brief definitions of the concepts included in the study, and the researcher's perspective. The second chapter describes the theoretical foundation upon which this study was based, and reviews the literature related to persistence, retention, student development, inner development, spirituality, and grit. The third chapter introduces the frameworks for the methodology used in this study, describes the design that was built out of that framework, and details the population, research questions, hypotheses, data collection, methods of analyses, and data handling that were included in the study. Chapter four describes the results of the analyses of the data. The fifth chapter concludes with building a theory, discussion of the findings in light of that theory, application of the theory, limitations, and recommendations for future research. References and appendices, including tables, follow chapter five.

CHAPTER 2:

LITERATURE REVIEW

As indicated in the introductory chapter, this study examined the phenomena of spirituality and grit, and their relationship to persistence in college students at a Midwestern public university to develop theory regarding their relationship to each other, and potential impact on the college students' eventual graduation from the university. This study used historical archival data collected during the time when those graduates were attending that public university, along with at-graduation surveys of seniors about their university experience; or in other words, it used a secondary data analysis approach because the data were not collected for the specific purposes of this study. This chapter reviews the literature pertaining to the theoretical foundation from which this study was developed, the constructs being examined within the study, and the approach out of which the methodology for the study was designed and implemented.

Theoretical Foundation

Theoretical perspectives about persistence/retention have been evolving over the past several decades. Spady (1970, 1971) originally used Durkheim's (1897/1951) theory of suicide to describe dropout from higher education. Tinto (1975) subsequently expanded upon Spady's work to create a predictive model of dropout based upon the "processes of interaction between the individual and the institution that lead differing individuals to drop out" (p. 90). Tinto emphasized that a theoretical model of persistence and/or dropout behavior must include "sets of individual characteristics and dispositions relevant to educational persistence" (p. 93). He recommended that this should include "background characteristics, . . . expectational and motivational attributes of individuals, . . . goal commitment, . . . and institutional components

which predispose him toward attending one institution (or type of institution) rather than another" (p. 93). Other elements Tinto considered included financial and time commitments made by individuals. He pointed out that for many, "attendance at a specific institution . . . may be an integral part of long-range career plans" (p. 94) whereas for others with limited financial resources a long-term commitment to a specific institution and/or career path might be problematic. He argued that it is the individual's "integration into the academic and social systems of the college that most directly relates to his continuance in that college" (p. 96). His original model is illustrated in Figure 2.

Since Tinto proposed this theoretical model of dropout, the research community has moved from a focus on leaving college—or dropout—to a focus on institutional retention and student persistence in college. Tinto (1993) subsequently revisited his model to add student-community engagement in the form of college classes, learning communities, and supportive faculty and peer groups as critical factors in promoting student persistence. His updated framework focused on student expectations, support, assessment and feedback, and involvement (or engagement). In addition, Tinto (2012) recently acknowledged that "knowing why students leave is [not] knowing why students stay and succeed. The process of persistence is not the mirror image of the process of leaving" (p. 5).

Despite Tinto's updated model, other scholars felt that it neglected several important factors involved with a student's decision-making process to persist in or drop out from college. Braxton (2000) asked several researchers to contribute their perspectives on persistence, culminating in a collection that examined a range of approaches, including economic influences, a psychological model, college climate, capital and social reproduction, minority retention, and power and identity aspects of students' experiences in college (based on critical theory). .

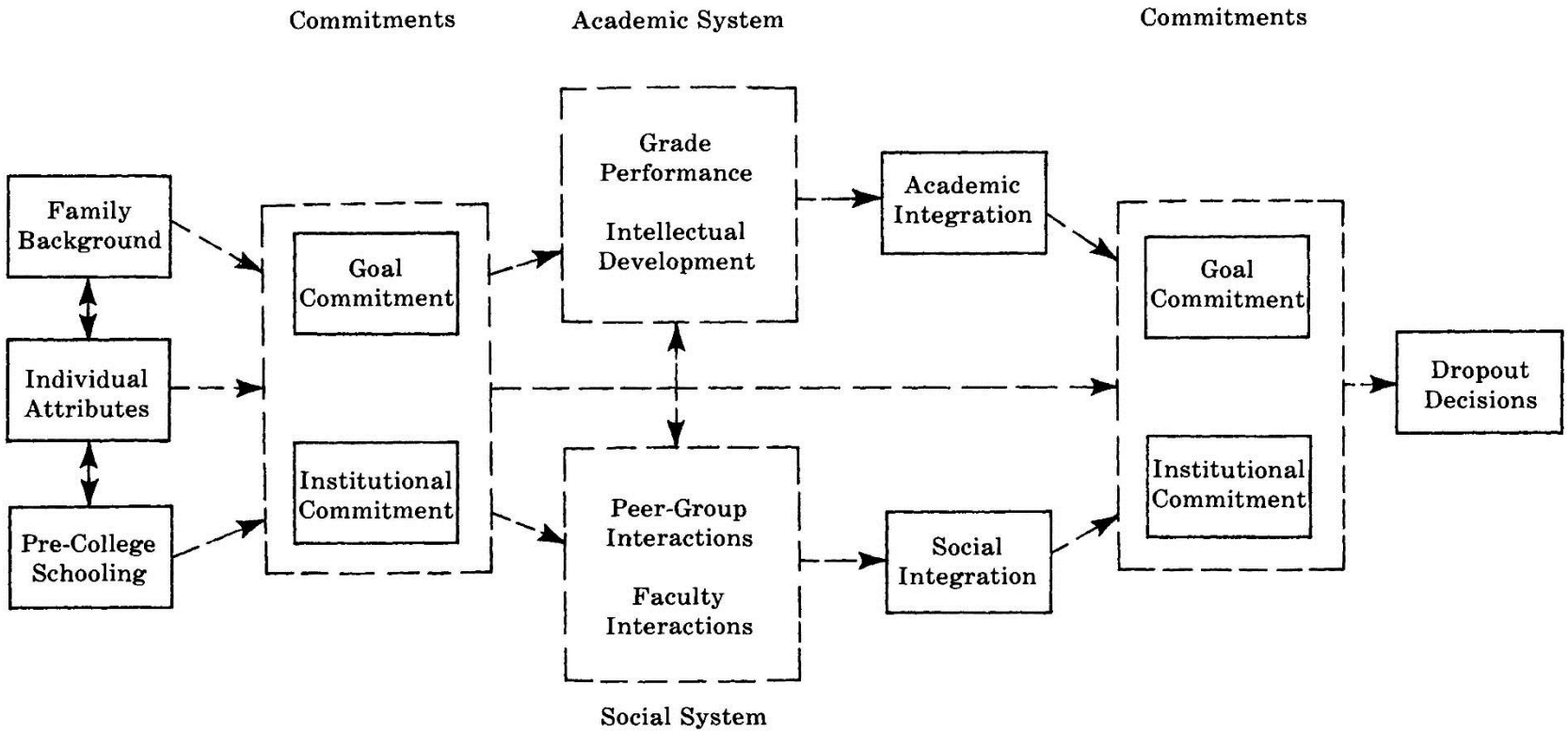


Figure 2. Tinto's (1975) original model entitled "A conceptual Schema for Dropout from College" (p. 95).

More recently, Braxton et al. (2014) conducted additional research to further address deficiencies they perceived with Tinto's model. They introduced the concept of psychosocial engagement where the amount of "psychological energy that a student invests in various social interactions at their college or university" (p. 91) influences their social integration. This includes behaviors that students use to manage stress. Of these studies, the psychological model with the related concept of psychosocial engagement, and the power and identity approaches to student persistence are the most relevant to this study, and the foundation upon which this study intends to build.

Bean and Eaton (2000) claimed that persistence and/or leaving college is a behavior, and behavior is "psychologically motivated" (p. 49). Within the scope of behavior, they outlined aspects that contributed to a persistence decision. These included the following:

> Action precedes outcome . . . cognitive processes such as expecting, evaluating, choosing, desiring, and intending precede behavior . . . psychological processes result in attitudes about one's self . . . [including] self-efficacy theory, coping theory (specifically approach/avoidance theory), and attribution theory. (p. 49).

They argued that the student brings certain entry characteristics to college and these characteristics influence how the student interacts with the college environment. As the student interacts with the environment, several psychological processes are taking place which result in psychological outcomes, in turn driving intermediate academic and social integration and performance that subsequently leads to an intent to persist. Details of this model are found in Figure 3.

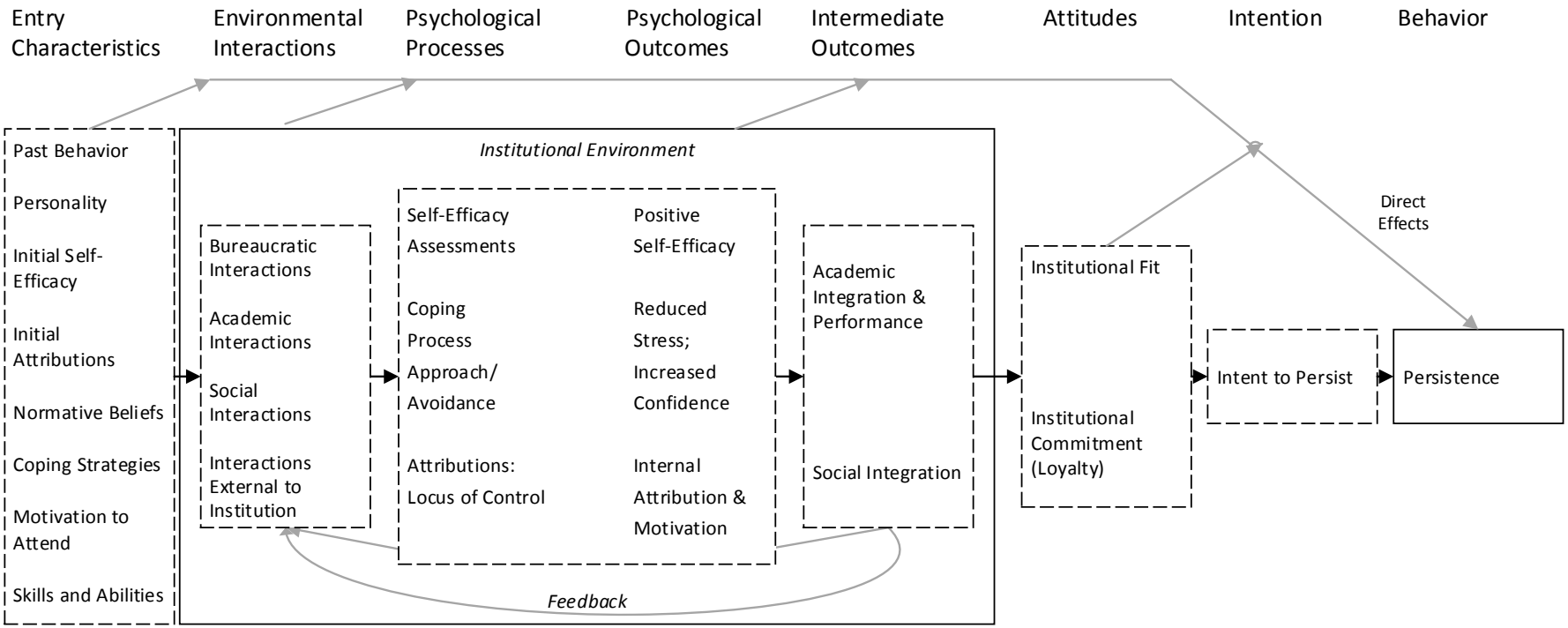


Figure 3. Bean and Eaton's (2000) Model: "A Psychological Model of College Student Retention" (p. 57).

Finally, Tierney (2000) discussed the importance of a sense of power, community, and identity to college student persistence from a critical theory perspective. He pointed out the cultural construction of the university setting often diminishes the sense of power that students might feel in navigating the oft-confusing waters of higher education. He proposed that as students elaborate upon their identity they are often empowered and have a greater sense of self-efficacy within the existing institutional environment. Thus, from this critical theory perspective, spirituality and grit may drive the student's larger sense of a positive identity with a corresponding feeling of power within the college environment, subsequently leading to increased persistence.

Constructs

Building on concepts found in the theoretical foundation for this study, this section reviews the constructs of persistence, retention, student development, inner development, identity, self-authorship, spirituality, and grit.

Persistence

The university environment is often a strange place. Levine and Dean (2012) portray it as a *tightrope* where students struggle "to maintain their balance as they attempt to cross the gulf between their dreams and the diminished realities of the world in which they live" (p. ix). Tightropes are precarious places. It is easy to fall off one unless you pay careful attention to the task of walking across it. When viewed from this perspective, then, persistence becomes the method(s) that students use to pay careful attention to their time at the university to successfully complete the crossing. Kuh, Kinzie, Schuh, Whitt, and Associates (2005) claimed that "what students do during college counts more for what they learn and whether they will persist in college than who they are or even where they go to college" (p. 8). They postulated that student

engagement is the driver of student persistence, and the attention that a university pays to encourage student engagement in five cluster areas (viz., level of academic challenge, active and collaborative learning, student interactions with faculty, enriching educational experiences, and supportive campus environment) has demonstrated greater success in student graduation rates; that is, students who persist until they complete their studies at the university.

Habley, Bloom, and Robbins (2012) likewise noted that multiple variables impact student success, and that an institution must address its specific mix of culture and students to be successful in its programming. Regardless of how prepared students are when they arrive on campus they must exhibit "behaviors and develop personal characteristics that contribute to persistence . . . [and] identify and commit to a plan of study that is congruent with interests and abilities" (p. xv). In a review of persistence literature related to online learning, Hart (2012) noted several inconsistencies with the term, ranging from an "antonym of attrition" to "an intent to return" and acknowledge the complex nature of persistence as a "phenomenon that leads to completion of a . . . program of study" (p. 29). She identified several factors associated with persistence, and commented that many of them were related more to the non-academic and psychological aspects of the student's experience in college, including coping abilities, communication, self-efficacy, and personal growth.

Many researchers have focused on these psychological elements related to persistence (and graduation) including Braxton (2000), DeWitz, Woolsey, and Walsh (2009), Duckworth, Peterson, Matthews, and Kelly (2007), Melguizo (2011), and Tinto (2012). They agreed that more attention needs to be paid to the non-academic reasons for persistence in order to understand the phenomenon, and how it translates into graduation. Of these, the primary characteristics they cited included identity development, self-authorship, self-efficacy, a sense of

purpose larger than one's self—often defined as spirituality/religiosity, and grit. Melguizo reviewed and critiqued a number of persistence theories that have emerged over the years, and claimed that most of them focused on the structural and institutional elements that impacted the student, without taking into account the "students' observed and unobserved characteristics (i.e., motivation and non-cognitive characteristics) that might be correlated to the process of persistence" (p. 403). She pointed out that the recent contribution of psychology to persistence theory "is particularly important given that it has identified non-cognitive traits as potential mechanisms to increase college persistence and attainment" (p. 418).

Wawrzynski and Pizzolato (2006) explored the relationship between student characteristics and self-authorship as it related to their academic paths. They suggested that future research should explore the non-cognitive variables related to self-authorship because of the complicated nature of the subject. Vuong, Brown-Welty, and Tracz (2010) studied self-efficacy in sophomore students as it related to academic success, and found that it directly impacted GPA and contributed to first-generation sophomore success. This connection is further supported by Reynolds and Weigand (2010) who explored academic and psychological attitudes of first-year students and the impact on retention. They found that resilience—related to the concept of grit—and feelings of self-efficacy—related to the concept of equanimity—were impacted by race and whether students were first-generation students, further complicating the overall understanding of the retention picture.

Spirituality among college students has become a topic of increased interest to researchers who are seeking to understand this phenomenon and its connection to persistence. The most well-known of the research studies into this area was a longitudinal study into spirituality in college students conducted from 2003-2010 by the Higher Education Research

Institute (HERI) located at UCLA (Astin, Astin, & Lindholm, 2011a, 2011b). Tisdell (2003) and Chickering, Dalton, and Stamm (2006) found that as individuals internalized their spirituality, they developed a more authentic identity and a sense of wholeness that had not existed before. Identity development has long been identified as a contributing factor in students' academic success in college (Chickering & Reisser, 1993; Tierney, 2000). Understanding the role of spirituality in identity development and other aspects of the student's psychological development has become increasingly important to educators as they seek to understand how these things impact persistence.

Other studies have examined student persistence and retention from the perspective of grit. This variable has been defined as "perseverance and passion for long-term goals" (Duckworth et al., 2007, p. 1087), and have correlated it to academic persistence and success. Zhivotovskaya (2009) reported that Duckworth and Seligman's research in 2005 showed the "correlation between self-discipline and achievement was twice as large as the correlation between IQ and achievement" ("Grit," para 1). One interesting aspect of the interaction between personality and intelligence was noted by Hokanson and Karlson (2013) who found that students with "highly rated intelligence often lack persistence or grit in the face of fear or failure, through a lack of challenge in their learning experiences and having had substantial support for their successes" (p. 108). From this list of factors influencing persistence, this study focuses on the constructs of spirituality and grit.

Retention

Retention is the institutional experience of students persisting through their studies to achieve a specific objective. The first line of retention is measured in the freshmen year; that is, did the student register for courses the second semester, and did the student return for the

sophomore (and subsequent) year(s)? The second measurement of retention is whether the student continues to the point of graduation. Oftentimes the terms persistence and retention are used interchangeably, however it is worth noting that persistence is generally considered in terms of the student perspective, and retention from the institutional perspective (Habley et al., 2012).

Student Development

Development is a term that has been used in a variety of ways to describe the process that occurs as an individual changes from birth to death. Perry (1984) stated that it occurred when an individual was encouraged to progress, or move, despite an inclination to conserve, or stay put. The oppositional nature of those forces shaped, or developed, the individual as the individual moved from one state of being to another. The application of development specifically to college students rose out of the philosophical statement of the American Council on Education (ACE) in 1937, wherein it was stated that to preserve, transmit, and enrich culture—described as a basic purpose of higher education—educational institutions were obliged:

> to consider the student as a whole – his intellectual capacity and achievement, his vocational aptitudes and skills, his moral and religious values, his economic resources, his aesthetic appreciations. It puts emphasis . . . upon the development of the student as a person rather than upon his intellectual training alone. (p. 3)

This guidance was reiterated by that same council's statement in 1949, wherein ACE detailed "the elements in a comprehensive institutional program" (p. 1), and repeated that the "student personnel point of view encompasses the student as a whole" (p. 2). In this statement, the student's "well-rounded development" (p. 2) included physical, social, emotional, spiritual, and intellectual aspects. Further, the student was described as needing to be a "responsible participant in his own development and not as a passive recipient" (p. 2). Finally, ACE claimed that "the full maturing of each student" in one aspect of development (e.g., knowledge of the world) should not be "sacrificed" (p. 2) to another aspect of development. "Rather," ACE

continued, "are all known aspects of the personality of each student viewed by the education and personnel worker as an integrated whole" (p. 2).

Some critical and post-colonial theorists have argued that it is no longer the purview of higher education to preserve, transmit, and enrich culture. Chickering and Reisser (1993) noted in their preface that in 1969—the date of the first edition of *Education and Identity*—"many . . . doubted that colleges and universities should be concerned about students' personal values, ways of thinking, modes of learning, or interpersonal and intercultural skills" (p. xi). Today, however, few would argue with the need to attend to the task of whole student development, if for no other reason than non-cognitive developmental aspects of the student often impact the student's success in the atmosphere of higher education. Developing the whole student is a daunting task, but it is one that has been undertaken with unstinting attention by a number of scholars who have stayed the course despite the move of higher education to a more concentrated focus on intellectual development, with corresponding decreases in attention to other aspects of the college student.

Scholars have examined a multitude of ways that college could affect student development, developing theories as they researched. Pascarella and Terenzini (1991) found that in an extensive review of the literature on the subject, college had an impact on "cognitive, moral, and psychosocial characteristics, as well as on values and attitudes and various quality of life indexes" (p. 573). Further, they found that impact also extended into an impact on the lives of the children of those college students. In the intervening years, hundreds of researchers have studied college student development from a myriad of perspectives (e.g., a search in Academic Search Premiere database for "college student development" between 1991 and 2014, and limiting it to academic journals, found over six hundred items). The contexts of these studies

over several decades have ranged from the impact of leisure on development (Bloland, 1987), boredom and its impact on development (Watt & Vodanovich, 1999), the use of jazz to enhance student development (Barber & Barber, 2005), and the impact of immersion trips on the development of compassion in college students (Plante, Lackey, & Hwang, 2009), to the relationship between students' self-efficacy and their decision to eat green (Weller et al., 2014) to list just a few of the more esoteric subjects.

Evans, Forney, Guido, Patton, and Renn (2010) stated that if they were to devote a chapter to every theory on student development, the book would comprise over 50 chapters. Instead, they grouped the theories in typologies. These included foundational theories upon which other theorists have built, integrative theories, and social identity theories. Within each of these broad categories, researchers have explored cognitive and non-cognitive aspects of development, leading to a rich landscape of views about student development. Kegan (1982, 2000) argued that in the course of making meaning—part of the development process—individuals do not operate out of a single mindset such as cognitive or affective perspectives. He claimed that theories that focused on a single aspect of development were inadequate to describe the complex nature of development.

Likewise, Wolf-Wendel and Ruyel (1999) argued that the foundational models no longer served the population of students enrolled in higher education. They pointed to freshmen survey data from the Higher Education Research Institute (HERI) that described large numbers of students who were older than the norm for freshmen, who worked a significant number of hours each week, who came from difficult backgrounds, who were ethnic minorities, and so on. They claimed that students "never matched academia's expectations of what they should be" (p. 41). They called for a renewed collaboration between the academic and co-curriculum aspects of

higher education, to create environments where students felt they mattered, and for theories to address development from more integrated perspectives.

Student development comprises what Astin et al. (2011a, 2011b) have referred to as *outer* and *inner* aspects of development. *Outer* development generally includes things the student has done, such as performance in courses, the number of courses taken, curricular and co-curricular involvement, and persistence towards a degree. *Inner* development focuses more on who the student is, such as values, maturity, moral development, and identity. Of these, student identity has been identified as a key factor in student development and well-being by Astin et al., Parks (1986), Chickering et al. (2006), and Dalton, Eberhardt, Bracken, & Schols (2006), among others. Within this schema, there are multiple ways to explore aspects of student identity. While race, ethnicity, gender, and socio-economic status (among others) have all been researched, there is less understanding about the contribution that a student's religious and/or spiritual beliefs may make, including to a student's health, sense of life purpose (or career direction), self-efficacy, wholeness, and mattering (Dalton et al., 2006; DeWitz et al., 2009). This requires attention to the inner aspects of development.

Inner Development

Identity. Erik Erikson's research on identity development has greatly influenced student development identity research (Evans et al., 2010). According to Erikson (1963), ego development primarily occurs during adolescence and young adulthood, but can develop over the course of a lifetime. Ego development involves a process of exploring the way an individual uniquely relates to the world. Identity formation is dependent upon the ego development exploration process, and subsequent commitment to one's identity. Hersh et al. (2008) described identity as the "enduring self" that is shaped by life experience, and "involves the achievement of

self-awareness and self-acceptance" (p. 12). They described identity development as one of the core transformational experiences achieved in "higher" education, and a major contributor to and outcome of the process of self-authorship. Students with strong identity development are better able to understand the perspectives of others without losing sight of one's own commitments, engendering a stronger sense of purpose (Baxter Magolda, 2009).

In doing research on success patterns in certain college students, Spittle (2013) noted that International Baccalaureate (IB) students performed better in college than their neighborhood peers who attended traditional public high schools prior to enrolling in college. He found that they were better prepared because they had "gained the broader academic mind-sets for college success, such as . . . a strong identity" (p. 31). He attributed their ability to succeed in college to the fact that they had a strong sense of their abilities. Torres, Jones, and Renn (2009) described enhancing identity development among college students as a "primary role of student affairs practitioners" (p. 1) due to its importance to students in their successful navigation of school and transition into adulthood.

Self-Authorship. Building on identity development is the concept of self-authorship. Baxter Magolda (1999, 2004a, 2004b, 2009) heavily contributed to the concept of self-authorship within the student development theoretical foundation and described it as an emerging sense of self when students are confronted with situations "where there were neither clear-cut answers nor were there readily available formulas for success" (Wawrzynski & Pizzolato, 2006, p. 678). Within the framework of self-authorship are three phases which interweave with each other: (a) the crossroads, (b) becoming the author of one's life, and (c) internal foundations. During the crossroads phase, "students move from feeling dissatisfied and in need to self-definition" (Wawrzynski & Pizzolato, 2006, p. 689) to the subsequent phases. Wawrzynski and

Pizzolato noted that a state of disequilibrium pushes students into the self-authorship mode, but that too much disequilibrium may "temporarily stagnate development" (p. 690) if students are not able to successfully manage the intensity of that state. However, as "students adjusted to their new collegiate environment and revisited their internal foundations, within the span of a year many participants returned to their self-authored ways of knowing" (p. 691).

In a dialogue about how self-authorship can be addressed on college campuses today, Baxter Magolda and Crosby (2011) described self-authorship as "a serious reflection on both one's own and others' perspectives, balancing agency and communion" (p. 3), and not as a self-centered, narcissistic privileging of experience. It also balances the individual from focusing on loyalty to a community with little regard for one's own opinion. It consists of becoming grounded in one's own place, while accommodating the experiences and opinions of others.

Spirituality

The discussion of inner development would not be completed without looking at the concept of spirituality. Moberg (2002) claimed that spirituality is a hard construct to measure, citing one study that found 35 different measurements related to spirituality. That study grouped spirituality into three categories defined as theological interpretations, anthropological approaches emphasizing "human nature and experience" (p. 48), and "historical-contextual approaches that accentuate experience rooted in a particular community's history" (p. 48). Farias and Hense (2008) suggested that people who score high on spirituality scales may be psychologically different than those who score lower, and it is the observed psychological differences that give us a better understanding of what we are measuring as spirituality. Dalton et al. (2006) distinguished between religious spiritual search (within the confines of a religious structure), and secular spiritual search (outside a religious structure). Within those states, they

identified four types of seekers: faith-centered, interfaith, mindfulness, and wellness. They also differentiated between those who preferred activities that occurred in solitude versus social settings. Tisdell (2003) identified seven assumptions related to spirituality, and emphasized that spirituality and religion are not the same, but that "for many people they are interrelated" (p. 28). This underscores the points made by Moberg (2002) and Dalton et al. (2006).

Both Tisdell (2003) and Astin et al. (2011a, 2011b) explored the role spirituality plays in college student lives. Tisdell claimed that even when college students do not recognize the role of spirituality, the essence of spirituality involves education that leads towards a transformation of self through the manipulation of symbolic processes. While she acknowledged that not all students may recognize the transformation of self as spiritual, she pointed out the similarities in the academic and spiritual objectives. Astin et al. led the HERI study on spirituality, and discussed the implications of spirituality among college students in depth as a result of their findings.

The HERI spirituality study. Any examination of spirituality in higher education would not be complete without considering the longitudinal study conducted by the Higher Educational Research Institute (HERI) on the effects of spirituality on college student lives, as well as the follow-up work on spirituality among the faculty of higher educational institutions. These studies were conducted at UCLA over the seven-year period from 2003 to 2010, and consisted of surveys from college students attending 136 institutions representing a cross-section of public, private, secular, and religiously-affiliated institutions that offered four-year degrees. Support for the research was provided by the John Templeton Foundation. The primary researchers engaged in this study, Astin et al. (2011a, 2011b), reported that at the inception of the study—though a significant number of studies had been done on college student development—

very little work had addressed the spiritual development of college students. More recently, they noted that although the number of studies on spiritual development in college students has increased, most of it has been done at or by religiously affiliated institutions.

Findings from the HERI study (Astin et al., 2011b) indicated that students showed greater interest in, and practice of, religiosity, and that it was important to students' sense of well-being (Dalton et al., 2006). Morris, Smith, and Cejda (2003) reported on several studies that found students who were "more satisfied religiously with their colleges were more likely to persist than their peers who were less satisfied religiously" (p. 345), a finding that their study also supported. Bowman and Small (2012) discriminated between hedonic (pleasure) and eudaimonic well-being (quality of life) in their study of spiritual engagement in college students, yet found that both contributed to students' sense of self-efficacy and self-determination.

Other studies of spirituality in higher education. Reymann, Fialkowski, and Stewart-Sicking (2015) reported their study of spirituality in college students showed that higher scores on a faith scale correlated with a greater sense of well-being and associated success in college. Zhang et al. (2014) likewise reported that students with higher faith scores reported a better quality of life a year later. In an overview of the connection between spirituality and higher education, Dalton et al. (2006) claimed that the HERI Spirituality Project data showed high levels of student interest in and practice of religiosity, and that it was important to students' sense of well-being. Kress, Newgent, Whitlock, and Mease (2015) found that students with higher levels of spirituality/ religiosity, life satisfaction, and life meaning were protective factors against college student self-injury. In other areas of development, Saggio and Rendón (2004) found that spiritual engagement for American Indian/Native American students—typically a low retention group—was one of three contributing factors to their persistence in college. Rendón

(2006) noted that many minority students find spirituality to be an important aspect of their lives, and when students experienced "satisfaction with the development of their religious philosophy of life [they] were more likely to persist in postsecondary education" (p. 6). This finding was supported by English's (2015) study of Black men at a predominantly White institution, who pointed to faith support systems as helping them persist.

Love and Talbot (1999) argued that institutions should be concerned with the holistic development of their students. They pointed out that spirituality has increasingly become a topic of interest to researchers from multiple academic disciplines in their pursuit of *helping* professions, including psychology, social work, health, counseling, nursing, and teaching and learning, as well as the increasing interest in community service, service learning, new age spirituality, and servant-leadership models. They claimed that these traditional and newer academic areas have benefited from understanding the impact of spirituality/religiosity on these fields, and "provide an interdisciplinary foundation of knowledge" (p. 362) upon which academe can build in efforts to integrate spirituality/religiosity into the campus.

Mengel (2012) posited that spiritual intelligence is the third leg of a triad built from cognitive intelligence, or knowing *how*, emotional intelligence, or knowing *who*, and spiritual intelligence, or knowing *why*, and that spiritual intelligence allows us to "address and solve problems of meaning and value" (pp. 33-34). Similarly, Keeney (2012) bemoaned the state of higher education as a place for "job-training" (p. 21) and called for a place where students could once again address questions of "how one ought to live" (p. 22). Thus, it could be argued that spiritual development is an aspect of student development that relates to student identity, health, and life direction, and should be integrated into the college experience.

In an overview of factors influencing persistence, Kennedy (2013) argued that the values students hold and place on the "competing and conflicting goals" (p. 183) in life, drive the motivation to persist academically—or not—depending on where academic goals fall in students' priority lists. Students may not even be aware of where they place academic goals, but they make daily decisions that reflect that placement, such as choosing to go to a party rather than to study. A person's value system is organized by the way that person has made sense of life, and the resultant priorities—or values—are placed correspondingly from that sense. Parks (1986) argued that this process of making meaning is a core function of spirituality. She stated that making meaning corresponds to the beliefs one holds about life—and belief ultimately drives action on those beliefs. Thus, returning to Kennedy's position, if a student believes in the importance—or values—of academic achievement, that student may choose to study; whereas if a student prioritizes friendship over academic achievement, that student may choose to go to an activity. Hence, while not overtly spiritual in nature, a student's determination to persist academically—following Parks' contention—has come out of a spiritual process of making meaning and turning that meaning into belief and then action.

Spiritual engagement. Spiritual engagement is considered the process of translating spiritual expression into activity in an individual's life. The study of spiritual engagement in higher education is related in part to the notion that student engagement drives much of the success students achieve in college, and spiritual engagement is one aspect of student engagement. Spiritual engagement is one of many factors of engagement that the National Study of Student Engagement (NSSE, 2016b) included in their annual surveys between 2004 and 2015. Rennick, Smedley, Fisher, Wallace, and Kim (2013) described it as the way students integrated spirituality into their lives, and measured it based upon the time students reported spending on

spiritual or religious activities during a specified period of time; usually a typical week. While spiritual engagement and spirituality are addressed by the NSSE items, there is not a defined *type* of spirituality captured by these items; rather the respondent was left to self-define what is meant by spirituality beyond the somewhat generic list of activities (e.g., worship, meditation, prayer).

Spiritual goals. Goals engender a sense of purpose for students, which helps them focus and "demonstrate resilience when confronted with obstacles" (Hersh et al., 2008, p. 16). Spiritual goals are generally built upon a foundation of thought that promotes visualization of a purpose that is greater than the limited world of the individual—often related to specific religious beliefs (Emmons, 2005), and may be an expression of spiritual engagement. Even when the "beyond-the-self purpose" (p. 1) is mundane, Yeager, D'Mello, Paunesku, Spitzer, and Duckworth (2013) found that learning outcomes were improved. They noted the work of Viktor Frankl who described how this type of purpose enabled a person to keep going even in the "most appalling circumstances" (p. 6). Tisdell (2003) found that as individuals internalized their spirituality, they developed a more authentic identity and a sense of wholeness that had not existed before.

Grit

Duckworth and various associates (e.g., Duckworth & Seligman, 2005; Duckworth et al., 2007) are the primary researchers leading the study of grit in various environments, including higher education (Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014). This discussion is focused on studies that have been done in that setting. Komarraju, Karau, and Schmeck (2009) found that "specific aspects of personality, such as grit, sociability, and emotional stability, are important influences on academic achievement" (p. 50). Allen (1999) found a strong desire to complete college contributed to persistence to graduation. This strong desire could also be

defined as grit (Zhivotovskaya, 2009). Characteristics of grit include "behaviors such as not being discouraged by setbacks, maintaining focus on a project, being a hard worker, completing tasks, and being diligent" (Chang, 2014, p. 2). It has elsewhere been described as the ability to regulate self-control, to have stamina and maintain focus in pursuit of a goal despite "failure, adversity, and plateaus in progress" (Duckworth et al., 2007, p. 1088). Yeager et al. (2013) found that grit became operational in creating persistence to a goal even when the tasks to reach that goal appeared inconsequential, so long as the individual perceived the goal itself as worthwhile, and developed a strong desire to achieve the goal.

One aspect of the interaction between persistence, grit, and intelligence was noted by Hokanson and Karlson (2013) who found that students with "highly rated intelligence often lack persistence or grit in the face of fear or failure, through a lack of challenge in their learning" (p. 108). Duckworth and Seligman (2005) likewise found that self-discipline accounted for more success in performance than an individual's IQ. In follow-up studies, Duckworth et al. (2007) argued that consistency may be as important a factor as intensity of effort; for example, the focus on a specific area of study may bring better results than just working hard on a variety of subjects. This was found to be the case with spelling bee champions, where deliberate practice and focus on learning words was more effective than casual reading or quizzing with others (Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011). Duckworth et al. (2007) also found that grit increases with age, hence older students may be grittier and persistent than younger students.

Zhivotovskaya (2009) reported that Duckworth and Seligman's research in 2006 showed the "correlation between self-discipline and achievement was twice as large as the correlation between IQ and achievement" ("Grit," para 1). To develop grit, Zhivotovskaya proposed

breaking goals down into achievable tasks and maintaining effort by tracking progress towards those goals. She argued that when people believe that their work can overcome obstacles, their mindset allows them to change and be more successful. Alternatively, people who believe that having some level of talent is the only way to be successful tend to become fixed in place, limited by what they believe about their level of talent.

Hokanson and Karlson (2013) listed several personality characteristics that lent themselves to performance in the classroom and the workplace, and focused on the importance of creativity and grit. They suggested that ways to foster the development of grit is to help the student define individual goals, identify the obstacles to achieving those goals, and determine how to overcome those obstacles. One example they gave was of welding students who overcame fear of their welding equipment to become skilled in their craft.

Grit has been linked with other factors identified with persistence. Cooper (2014) explored non-cognitive factors associated with success in first- and second-year college students, and found that grit was positively associated with self-efficacy, another factor in persistence. In a study of Appalachian first-generation students who persisted to graduation, Hunley (2015) found the strongest factor was self-determination and motivation on the part of those students to "provide a better life for themselves and their families" by taking "all of the other factors that shaped their experience and [using] them to fuel their motivation to succeed" (p. 114). Finally, Von Culin, Tsukayama, and Duckworth (2014) found that the "pursuit of engagement and meaning, as opposed to pleasure, comprise motivational correlates of grit" (p. 6), which in turn, seemed to "facilitate sustained effort over time" (p. 6). These findings broaden the understanding of how grit can lead to persistence.

A major question revolving around grit is whether individuals are hard-wired to be gritty, or they can be taught to develop grit. When asked about this in an interview with Perkins-Gough (2013), Duckworth said that is one thing they are in the process of exploring, and researchers do not completely understand how some individuals seem be naturally grittier than others. However, she suggested that Dweck's studies on 'growth mindset' might provide clues to teaching grit. Dweck's studies demonstrated that teaching young students "how the brain is capable of change when faced with challenges" helped them to persevere (Hochanadel & Finamore, 2015, p. 48). Duckworth elaborated that they are developing an educational intervention she called *deliberate practice*, where students engage in "very effortful practice on things [they] can't do yet" (Perkins-Gough, 2013, p. 36) as a way to determine if this type of effort can increase students' grit levels. In an interview on National Public Radio (NPR) with Tovia Smith (2014), Duckworth suggested that passion and getting kids to believe success is possible are important elements of developing grit. She stated,

> I don't think people can become truly gritty and great at things they don't love. So when we try to develop grit in kids, we also need to find and help them cultivate their passions. That's as much a part of the equation here as the hard work and the persistence. . . . If you want kids to hang in and keep struggling, you have to first convince them that their struggle is likely to pay off. ("Latest Fad," para. 12)

Related terms. Use of the term *grit* has only recently become popular in academic research; the database Academic Search suggested *resilience* as an alternative. Hersh et al. (2008) defined it as "one's ability to deal effectively with stressors and risk at all levels of severity" where "an individual emerges from the episode with an ever-greater capacity to respond to future challenges" (p. 19). Another aspect of grit has been defined as *passion*, and a decision to stick to something because you want to "see how far [you] can go" (Doskoch, 2005, p. 41). *Self-discipline* is also integral to grit, because it helps a person stay focused on a goal and

not get distracted by things that might keep one from accomplishing that goal. Gitter (2008) found that people high in grit may avoid self-handicapping behaviors, which is related to self-discipline. Finally, Doskoch (2005) included *optimism* in the mix, a belief that "in the end that they're going to win, and until they do, they're just going to keep on pushing" (p. 49). Hokanson and Karlson (2013) found that students with "highly rated intelligence often lack persistence or grit in the face of fear or failure, through a lack of challenge in their learning experiences and having had substantial support for their successes" (p. 108).

Summary of Chapter

This chapter explored the theoretical foundation for this study, and reviewed the literature related to constructs of persistence, retention, student development, inner development, identity, self-authorship, spirituality, and grit. The study's foundation is derived from the model created by Bean and Eaton (2000) and the notions of power and identity presented by Tierney (2000), all of which developed out of a critique of Tinto's (1975) original model of student departure. The specific psychological aspects and processes of a student's spirituality and grit; their interactions and intersections with each other; and their impact on persistence to graduation are the driving points of interest for this study.

Persistence can be viewed as the method(s) that students use to pay careful attention to their time at a university in order to successfully complete their academic journey through graduation. Hart (2012) identified several factors associated with persistence, and noted that many of them were more related to the non-academic and psychological aspects of the student's experience in college, including personal growth. Other researchers have called attention to the impact of identity development, self-authorship, a sense of purpose beyond the self (or

spirituality), and grit upon persistence through graduation (Braxton, 2000; DeWitz et al. 2009; Duckworth et al., 2007; Melguizo, 2011; Tinto, 2012).

Student development has been included as an aspect of the college experience since 1937 when the American Council on Education (ACE) made it a part of their philosophical statement, emphasizing "the development of the student as a person rather than upon his intellectual training along" (p. 3). Pascarella and Terenzini (1991) found that college impacted all aspects of students' lives into their future(s), even extending into the lives of their children. Kegan (1982, 2000) argued that theories that focused on a single aspect of student development were inadequate to describe its complex nature. Astin et al. (2011a) broke student development down into *outer* and *inner* development, the latter focusing on who the student is, including student identity.

Within the purview of inner development and identity, a sense of understanding one's self in relation to others has been demonstrated to contribute to success in college (Baxter Magolda, 1999, 2004a, 2004b, 2009; Hersh et al., 2008; Spittle, 2013; Wawrzynski & Pizzolato, 2006). Tisdell (2003) claimed this aspect of development falls within the scope of spirituality. Astin et al. (2011a, 2011b) and Dalton et al. (2006) reported findings from a longitudinal study of spirituality that indicated students showed a greater interest in and practice of religiosity, and that it was important to their sense of well-being. Reymann et al. (2015) found that higher scores on a faith scale correlated with a greater sense of well-being and associated success in college.

Finally, Komarraju et al. (2009) stated that "specific aspects of personality, such as grit, sociability, and emotional stability, are important influences on academic achievement" (p. 50). Cooper (2014) found that grit was positively associated with self-efficacy, connecting back to student identity and college success. Von Culin et al. (2014) described the "pursuit of

engagement and meaning" as "motivational correlates" (p. 6) of grit, which broadens the understanding of grit as an aspect of student identity and its contribution to persistence. Duckworth (Perkins-Gough, 2013) pointed to research being done by Dweck in areas like *growth mindset* that may be promising in demonstrating that grit can be taught. Terms often used as synonyms for grit include resilience, passion, self-discipline, and optimism (Doskoch, 2005; Gitter, 2008; Hersh et al., 2008).

Next, Chapter Three explores the philosophical framework for the methodology proposed to be used in this study, describes the design that was built out of that framework, and details the population, research questions, hypotheses, data collection, methods of analyses, and data handling that were included in the study.

CHAPTER 3:

METHOD

Previous chapters introduced this study and discussed the research related to the study constructs and research questions. This chapter focuses on the methodology used for this study, and describes the procedures taken to select the framework, design, participants, data collection, and data analyses in terms of how they have been operationalized specifically for this study. As indicated previously, this study examined spirituality and grit and their relationship to each other, and to persistence to graduation, with Ball State University (BSU), a Midwestern public university, as the context for this study. In an epilogue to the Rockenbach and Mayhew (2013) text reporting on studies that were based on the HERI Spirituality data set, Strange (2013) commented on the post-positivist stance engendered by analysis of large survey data sets. Although he agreed that the studies provided insight into the complex nature of spirituality in higher education, he commented on the "mechanistic understanding of the topic" (p. 207) and wondered how much application could actually be made by those working in the field. He called for "more integrated and holistic approaches . . . that connect the disparate insights on the topic in the quest for engaging this critically important dimension of students' lives" (p. 207). He recommended—basing his commentary on Guba (1990)—"greater use of qualitative methods to generate theories 'grounded' in local circumstances. . . . It makes sense then to consider alternative perspectives and methods as this agenda of student spirituality further evolves" (p. 205).

This study focused on a quantitative approach while adding a qualitative analysis piece to existing data (demographic, academic, and survey responses to open-ended questions). This created a QUAN-*qual* (Morse & Niehaus, 2009) framework that added the student perspective

(or persistence) to the study, and addressed Strange's (2013) call for integrated approaches. Given the substantial student database and previously-created graduation data file managed by BSU's Office of Institutional Effectiveness (OIE), as well as potential access to seniors through annual surveys already conducted by OIE, the researcher used secondary data analysis techniques to glean additional meaning from existing collected data.

Methodological Frameworks

This section describes the philosophical worldview and methodological framework that drove the study design, namely pragmatism as influenced by the thinking of Pierce (1878; 1905) and elaboration by Savin-Baden and Major (2013) and Denzin (2012), while accounting for Denzin and Lincoln's (2011), Ellingson's (2011), and Richardson's (2000) arguments about the value of triangulation and crystallization to understanding complex questions and subjects. Further, this framework was inclusive of the methodologies of grounded theory, wherein the researcher developed a new theory based upon the findings of this study that addressed gaps in the present literature about the relationship between spirituality and grit, and how their intersection and interaction contributed to student persistence.

Pragmatism

The methodological framework for this study was guided by the philosophical worldview of pragmatism (Creswell, 2014). Pragmatism is a philosophical approach to knowledge that emphasizes "the subjective experience of the social world" (Savin-Baden & Major, 2013, p. 24). It originally developed out of work by members of the Metaphysical Club at Johns Hopkins University in the late 1800s, and was espoused by philosophers Charles Sanders Peirce, Williams James, and John Dewey (Savin-Baden & Major, 2013). These philosophers argued that meaning should be sought through understanding the practical applications of experience, and research

should reflect this practicality. Pierce (1905) emphasized realism, or engaging in questions not of "what might have happened" but "what actually happened," given conditions that have the possibility of existing, rather than speculating on whether something else could have happened if other conditions were possible. Further, Pierce claimed that "the Past [sic] is the store-house of all our knowledge" (p. 498) and while we can ask about the future, they are "*ipso facto* not *real* questions, that is to say, are questions to which there is no true answer to be given" (italics in original, p. 498). He elaborated that once we understand the past, we can then draw conclusions about the kind of behavior we might expect in the future.

The emphasis often associated with pragmatism is that thought should drive action (Savin-Baden & Major, 2013). Savin-Baden and Major claimed that a pragmatic approach to epistemology will gain knowledge through understanding the interactions between individuals and artifacts in their environment. They suggested it is most appropriate for testing theories in practice. Cherryholmes (1994) stated that "pragmatists emphasize context, . . . look to the consequences" (p. 209), are less concerned with the method, and more focused on the outcome. Garrison (1994) argued that pragmatism, with its attendant focus on realism, is an appropriate philosophical foundation for educational research because it acknowledges the dialectical and dialogical nature of education. He urged researchers to consider that "all knowledge is a social construction, as too are the tools of knowledge construction . . . all knowledge is contextual" (p. 13). Therefore, this worldview focuses on using research methods that *work*—or in other words, the method is not as important as the information gained (Denzin, 2012), and emphasizes practicality as espoused by Pierce (1905).

Considering that this study used an amalgamation of data types, it was defined as a mixed-method or "combined design" (Vogt, Gardner, & Haeffele, 2012) approach within a

primarily quantitative design umbrella. Some of the data were gathered from surveys, some from academic records, and some from short open-ended responses to survey questions. Thus, the variety of data types did not cleanly fall into a more-traditional quantitative study where a single instrument was used to collect data. The power of this method was suggested by the notion of triangulation, which suggested that if a researcher looks at a problem from different angles, the intersection of those angles creates a space wherein important answers may lie (Denzin, 2012; Ellingson, 2011; Hesse-Biber, 2010; Mertens & Hesse-Biber, 2013; Richardson, 2000; Vogt et al., 2012). Triangulation allowed the researcher to find and examine specific points of data that were important to the overall meaning of the study.

Additionally, the mixed-method study approach offered an opportunity to illuminate the complexity of data, which has been referred to as crystallization (Denzin & Lincoln, 2011; Ellingson, 2011; Richardson, 2000). Just as a crystal will reflect a different color if held in a different position in the light, enlightenment about what the data meant was built, layer upon layer. Therefore, by analyzing the open-ended responses to questions about graduating and graduated student persistence, additional light was brought to bear upon the persistence phenomenon. Morse and Niehaus (2009) described this as a method to "compensate for the inadequacies in meaning or detail that occurs with the quantitative core" (p. 122). In this case, the qualitative piece added the student voice that was required for a persistence rather than a retention study. It also enabled a dialogic conversation within the data, echoing the study's pragmatic roots. By using multiple sources of data asking similar, but not identical questions, the researcher theorized about the phenomena of spirituality and grit as they intersected and interacted with each other, and with persistence to graduation.

Grounded Theory

Given the researcher's development of theory about a relationship between spirituality, grit, and persistence to graduation, this study was considered a grounded theory approach. Stern and Porr (2011) argued that grounded theory is a natural outgrowth of a pragmatic philosophical approach to research because it addresses what people do as a result of their ideas and beliefs about something. In an update on grounded theory methodology in research, Stern and Porr also pointed out that the developers of grounded theory, Glaser and Strauss, claimed that all data related to a specific phenomenon—quantitative and qualitative—were valuable contributors to the emergence of a grounded theory about that phenomenon. As described by Glaser and Strauss (1967), grounded theory makes use of a variety of data types in order to saturate the understanding of the collected data. This was represented in this study by the use of data from a number of historical archives, including demographic, academic, and surveys that were conducted and collected by the Office of Institutional Effectiveness over the past decade. Creswell (2013) argued that this is a good approach when "a theory is not present" or the existing theories do not "address potentially valuable variables or categories of interest to the researcher" (p. 88). Grounded theory methods often "consist of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories from the data themselves. In this fashion, researchers construct a theory 'grounded' in their data" (Charmaz, 2014, p. 1).

While often associated with qualitative studies, grounded theory data need not be limited to the qualitative spectrum. Glaser and Strass (1967) called for the use of quantitative data through the process of secondary data analysis in the development of theory. They claimed that "what are relevant for theory are the general categories and properties and the general relations

between them that emerge from the data" (p. 189). Further, they asserted that "'crude' or 'general duty' indices . . . suffice to indicate the concepts of the theory and to establish general relationships between them, which in turn become the basis for suggesting hypotheses for the emerging theory" (p. 190). They additionally declared that "most discovery and [theory] generation is a secondary analysis of data collected for other purposes" (p. 194). Finally, they argued that crude indices could "be based on either a single questionnaire item or a series of items summed into an index" (p. 191).

Stern and Porr (2011) laid out a few basic principles for grounded theory projects that were followed in this study. The first principle consisted of approaching the research from a discovery rather than a verification perspective. This study intended to discover new insights about spirituality, grit, and persistence in college through graduation, rather than to verify existing thought (because there was no existing research on this relationship).

The second principle was to explain rather than to describe what is observed from the research; to go beyond mere categorization of what is happening, but to develop an explanation for the experiences and actions of people. In this way theory about behavior is developed. This study developed explanations describing the interactions and intersections that were identified between spirituality, grit, and persistence (persistence being an activity influenced by spirituality and grit), hence it drew from pragmatism philosophy about beliefs and ideas driving action.

The third principle espoused by Stern and Poor (2011) was to allow thoughts about the data to emerge rather than forcing the data findings to fit into a pre-conceived or currently existing theoretical frame or model. While this study began with a *hunch* that there was a relationship between spirituality and grit that might influence persistence, rather than forcing the data into one of the existing models of persistence, the researcher used reflective questioning to

understand what could be learned from the data, such as “What is really going on here? What is this data really reflecting?” (p. 43).

Finally, a grounded theory project is generally iterative, where the researcher collects some data, does some analysis, identifies some areas where additional information or analysis is required, and repeats the process. Thus, as the data were analyzed, the researcher considered whether an additional analysis of a previous set of data would be useful. Supplemental research questions were added to the study to reflect the findings from the original research questions and to expand the analyses beyond the original plan. In this way, multiple analyses were conducted on each set of data and between sets of data in an iterative fashion.

Secondary Data Analysis

As was previously mentioned, the researcher used secondary data analysis as the primary approach in this study’s use of existing data. Vartanian (2010) described secondary data analysis as a research approach where a researcher uses data sets that were compiled by organizations for a purpose other than the research purpose. They often represent an entire population of a specific community, or are considered representative of a larger population, such as a national population. These data sets are often longitudinal in scope, but may also be cross-sectional, where new samples are drawn at specific points within the survey period. An advantage to using existing data sets was reduced time and cost in the research data collection process, with subsequent quicker time to research findings about the population in question. However, a limitation in this approach occurred because the data were collected for a purpose other than the specific research question asked by the researcher, therefore, there were gaps in areas of interest to the researcher. Using this approach in this study limited the ability of the researcher to define the variables of spirituality and grit beyond those used within the original data collection process,

and as they were self-reported by the survey participants where survey questions are being used to represent the variables being studied. Further, it was not possible to ask for clarification of the meaning of specific responses by respondents included within the data set.

In determining whether a data set is appropriate for use in a research study, Vartanian (2010) suggested asking whether the variable(s) being studied are conceptually comparable to those included within the data set(s). In this case, questions related to spirituality and grit were included within the original surveys and the subsequent compiled data sets; therefore, while the number of questions related to these variables was limited, use of the data sets provided a preliminary point of exploration of the research question, and a foundation for an analysis of directions where future research might provide additional insights, harkening back to Glaser and Strauss' (1967) claims about the quantity of information necessary to develop theory, and to their claims about the use of secondary data analysis in the theory-development process.

Design

The purpose of this study was to conduct an analysis of the constructs of spirituality and grit, and their relationship to each other, and to persistence through graduation at a public university, and to theorize about the relationship and interactions between spirituality and grit on each other and on the persistence phenomenon, as illustrated in chapter 1, Figure 1, and reiterated in Figure 4. Descriptive, correlational, predictive, and content analyses were used to provide a comprehensive look at the data. Hedrick, Bickman, and Rog (1993) claimed that descriptive analyses "provide a picture of the phenomenon" (p. 44) and are appropriate to use when asking questions about correlation and relationships. Creswell (2014) argued that correlational design approaches allow researchers to "describe and measure the degree or association (or relationship) between two or more variables" (p. 12).

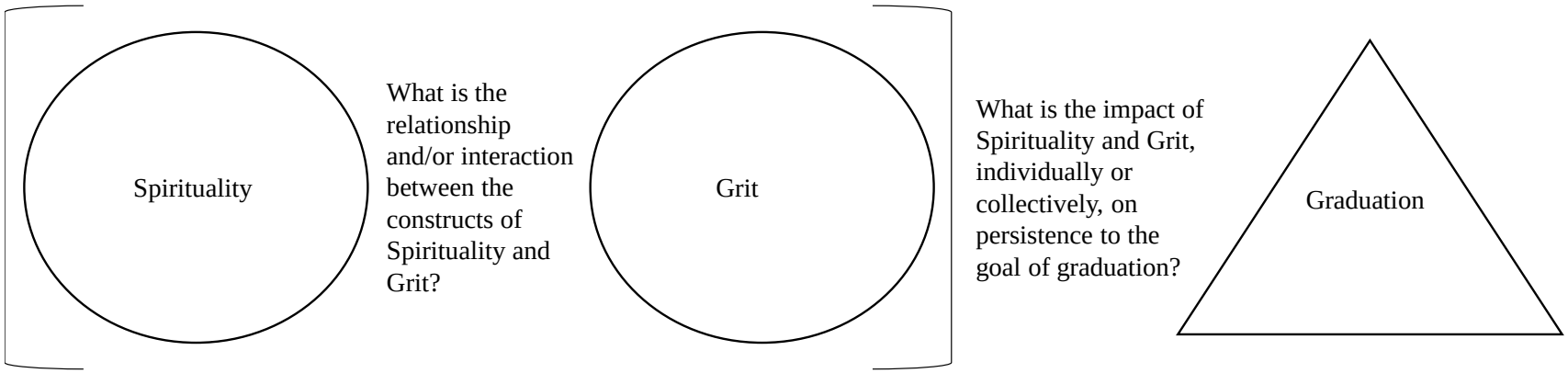


Figure 4. What is the relationship between and interaction of spirituality and grit, and their impact on persistence to graduation? What theories might account for this relationship?

This approach allowed for the manipulation and analysis of large data sets in order to answer the correlational, significance, and predictive strength research questions and hypotheses addressed by this study. However, the design went beyond a mere discussion of the findings. Theory development was part and parcel of the overall design plan. Where correlation and/or significance was found, the researcher proposed a theory as a way of providing explanation of these findings. Further, analysis of open-ended responses to surveys augmented theory development.

Research Question(s)

This study examined the following research questions:

RQ1: Is there a relationship (correlation) between spirituality and grit in college students?

RQ2: Do the constructs of spirituality and/or grit correlate with persistence to graduation?

Supplemental Q1 to RQ2: Do the constructs of spirituality and/or grit contribute to a higher predictive model for persistence to graduation?

Supplemental Q2 to RQ2: Do the constructs of spirituality and/or grit correlate with or contribute to a higher predictive model for GPA at graduation?

RQ3: How often do students attribute their persistence to graduation success to the presence of spirituality and/or grit in their college experience?

Hypotheses

The following hypotheses were derived from the research questions:

H_1: Spirituality and grit positively correlate in college students.

H_{1Null}: There is no correlation between spirituality and grit in college students.

H_2: Spirituality and grit significantly correlated ($p < .05$) with persistence to graduation.

H_{2Null}: Neither spirituality nor grit correlate significantly with persistence to graduation.

SupplementalQ1$H_{2:}$ Spirituality and/or grit contribute to a higher predictive model of persistence to graduation (beyond traditionally used academic models).

SupplementalQ1H_{2Null}: Neither spirituality nor grit contribute to a higher predictive model of persistence to graduation.

SupplementalQ2$H_{2:}$ Spirituality and/or grit correlate with and contribute to a higher predictive model GPA at graduation (beyond traditionally used academic models).

SupplementalQ2H_{2Null}: Neither spirituality nor grit contribute to a higher predictive model of GPA at graduation.

Population/Sample

Ball State University is a mid-sized Midwestern public research university with an average undergraduate student body population of 16,000 full-time students (BSU, 2016b). It is based in Muncie, Indiana, a city located an hour northeast of the Indiana state capital of Indianapolis. The university was original envisioned and promoted by the Ball family as a community-supported private teacher training school in 1899. When the private school failed, the Ball brothers bought the land and buildings and donated them to the state. The college subsequently became the Indiana State Normal School Eastern Division, focused on teacher education, and opened in 1918. The state's General Assembly renamed the school to Ball Teachers College in 1922, and to Ball State Teachers College in 1929. The college was renamed Ball State University in 1965 (BSU, 2016c).

The University's vision and mission focuses on entrepreneurial and immersive learning, which is designed to "transform information into knowledge, knowledge into judgment, and judgment into action that addresses complex problems" (BSU, 2016a, "Ball State Mission," para 1). Its vision statement reads "Ball State aspires to be the model of the most student-centered

and community engaged of the 21st century public research universities, transforming entrepreneurial learners into impactful leaders—committed to improving the quality of life for all" (BSU, 2016a, "Ball State Vision," para. 1).

For the 2013-2014 academic year, Ball State reported graduation rates of 44.5% for a four-year graduation of the 2010-2011 student cohort, 40.6% and 57.9% for four- and five-year graduation of the 2009-2010 student cohort, and 37.0%, 55.7%, and 60.3% for four-, five-, and six-year graduation of the 2008-2009 student cohort (BSU, 2014).

As a public university, Ball State relies on governmental funding for a majority of its revenues. The state of Indiana has included persistence in the list of criteria used to determine the level of funding the institution (ICHE, nd, p. 2). The approach used by this study to examine persistence at Ball State is particularly relevant to understand the nuances of its students' persistence. It also supports the decision to use this specific population for this study.

This study used archival demographic, academic, and survey data collected and/or maintained by the Office of Institutional Effectiveness at Ball State University as part of their graduation rate data file of the student population from 2004 through 2016. It also included archival data from the Senior Survey conducted by that same office.

Data Collection and Selection

This study used a historical graduation rate data set of the student population created by the Office of Institutional Effectiveness (OIE) at Ball State University, which included nine cohorts of students who entered as Freshmen from the years 2004 through 2012. The data set was built using original matriculation records (e.g., high school GPA, ACT and SAT scores, FAFSA data, etc.), academic records (e.g., number of courses taken per semester, semester GPAs, major, etc.), activity records (e.g., Living Learning Communities [LLC] or residence

hall), and demographic data gathered from a variety of sources. The original graduation rate data set also included data collected from external sources: the National Survey of Student Engagement (NSSE) and Making Achievement Possible (*Mapworks*) surveys, which included questions related to spirituality/spiritual engagement and grit (as broken down into its component parts). For this study, the variables representing the constructs of spirituality and grit were drawn from the NSSE and Mapworks survey questions. The questions included in these surveys changed over the years, impacting the choice of items used in this study. Attempts were made to select items that were used most consistently over the course of the cohort years included. The final list of items used is broken down by cohort year in Appendix A, Tables A1-A9. Further, a question about student-identified factors relating to their persistence through graduation was added to the Senior Survey in 2016 (see Appendix B), making that question a further point for analysis for the 2012 cohort.

Along with the graduation rate data set, the study used a separate data set comprised of the open-ended comments to the Senior Survey for the same period of time. This survey includes questions related to student satisfaction with various experiences at the university, as well as an open-ended question allowing students to comment on specific aspects of their experience. Therefore, the responses to the open-ended question were compiled into a separate data set in order to conduct a thematic analysis to ascertain whether students attributed their graduation success to spirituality or grit.

National Survey Student Engagement (NSSE)

The National Survey of Student Engagement is conducted annually by the Center for Postsecondary Research (CPR), a unit within the Indiana University School of Education. The survey collects information from “four-year colleges and universities about first-year and senior

students' participation in programs and activities that institutions provide for their learning and personal development" (NSSE, 2016a, "What does NSSE do?" para. 1). Over 1,500 institutions have participated in this survey since its first administration in 2000. Institutions receive reports that compare their students' responses with other institutions on "ten engagement indicators, six high-impact practices, and all individual survey questions" (para. 1). Ball State University participated in the NSSE survey in 2004, 2008, 2012, and 2015.

The survey substantially changed between 2012 and 2015 with engagement indicators replacing the benchmarks previously used (OIE, 2015). These indicators initially were grouped into five benchmarks, including "level of academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences, and supported campus environment" (Pike, 2013, p. 152). Subsequent revisions now group them into four thematic areas, including Academic Challenge, Learning with Peers, Experiences with Faculty, and Campus Environment. NSSE 2015 also measures High-Impact Practices, which "represent enriching educational experiences that can be life-changing" (p. 3). The use of effect sizes to report results is commonly used due to "the fact that many differences are statistically significant due to the large sample size" (p. 5). The questions drawn from these surveys for this study are summarized by cohort in Appendix A, Tables A1-A9.

Ewell (2004) stated that items on the NSSE survey were "specifically selected for inclusion . . . only if there was a clear empirical case in the literature on college student learning and development that the factor represented could be associated with learning gains" (p. 6). He also indicated that at its creation the survey was "extensively validated through two major field tests" involving student focus groups to "refine item content and to collect external evidence of links between particular item responses and actual student experiences" (p. 6).

Subsequent to its creation, other research studies have examined NSSE to assess the validity and reliability of the survey questions and scales. In an overview of these studies, Pike (2013) reported conflicting results, and noted that some of the studies criticizing NSSE "failed to consider the intended uses of the data" (p. 150). He described the creation of the NSSE survey questions, and stated that they were developed using "focus groups and cognitive interviews" and "early research revealed that students believed the questions were general clearly worded and easy to understand," while subsequent research showed that "students from different racial/ethnic groups interpreted the NSSE survey questions in similar ways" (p. 152).

Pike (2013) conducted a validity study of the 2008 NSSE administration to address the criticisms he identified, and found that the benchmarks "provided highly reliable group means with as few as 50 students" (p. 153). He concluded that it is "possible to use benchmark scores to gauge the engagement of student subgroups and evaluate the effectiveness of institutional actions and focused programs to improve student engagement and academic success" (p. 163). He further stated that his research suggested that "assessment and institutional research professionals are not limited to using NSSE results only for institutional assessment" (p. 163), and that the benchmarks are "adequate and appropriate measures of student engagement for the purposes of assessment and evaluation but not for the purposes of diagnosis or certification [of individual students]" (p. 165).

Finally, in a study conducted at Georgia Tech, Gordon, Ludlum, and Hoey (2008) found that using the individual NSSE items provided the largest amount of explanatory power for student outcomes compared to the benchmarks commonly used by NSSE. They also stated that "there may be some promise in using individual NSSE items as predictors of student success" (p. 37), which is supportive of the use this study made of the NSSE data. Further, they suggested

that an approach that "eschews domain scales in favor of targeting the specific elements that are most directly related to outcomes offers superior explanatory power and predictive validity" (p. 37).

Mapworks

Skyfactor Mapworks (formerly *EBI MAP-Works)* Fall Transition survey is administered to first year, second year, and new transfer students every year. This is an assessment system originally designed by Ball State University to "promote success and retention by helping students align their behaviors with successful outcomes" (BSU, 2016e, "Mapworks," para. 1), and then partnered with EBI to leverage online and beyond-the-university opportunities. Data from this survey are shared with administrators to identify at-risk students and provide appropriate support. Upon survey completion, students receive a customized report to help them "gain a better understanding of their strengths and weaknesses in areas essential to their persistence at the school" ("Mapworks," para. 2). From the time of its original inception, several studies have been conducted to confirm the validity and reliability of the *Mapworks* items, including measurements of face validity, factor reliability, and convergent and divergent predictive validity (EBI MAP-Works, 2012). In 2013, *Mapworks* added a grit/resilience factor consisting of 10 items in a pilot test conducted at Ball State University (Timmerman, 2014). Although the 2013 cohort was not included in this study (graduation would not have occurred at the time of this study), other items within *Mapworks* have been associated with spirituality and grit, and were included as variables for this study. The items included in the analysis are identified by cohort year in Appendix A, Tables A1-A9.

Senior Survey

The Senior survey is administered every semester to get feedback from graduating seniors in "a variety of areas ranging from the core curriculum, wellness, technology, and diversity" (BSU, 2016e, "Seniors," para. 1). A question related to student-identified factors that contributed to their persistence at the university was included in the survey for the 2012 cohort year (see Appendix B). This question was added after consultation with the director of Institutional Effectiveness and the designer of the Senior survey about an appropriate way to survey seniors about the factors they felt had contributed to their ability to persist to graduation. Adding this question to the senior survey was justified based on the perceived long-term benefit from obtaining this information because the state of Indiana now requires reporting metrics related to persistence as part of the funding package that Ball State University receives.

Researcher's Positionality with Respect to Data

The researcher became aware of the existence of these data through employment in the office where it is collected and maintained. Her position as editor (formal title is "Communications Specialist") of technical reports using these data provided awareness of, but not direct access to, raw data. Analysts in the office originally created, and now update and maintain, the graduation data set and Senior survey data set as part of the office's commitment to providing current statistical information on retention and graduation for university use, and for reporting requirements to the public and governmental entities. Access to these data was obtained through approval from the Assistant Provost of Institutional Effectiveness (director of the office) and provisions for protecting student privacy followed the university's IRB protocols as specified by IRB through the submission for study approval process.

Verification of Validity of Selected Survey Items

Following the creation of an initial list of the items intended for inclusion in this study, three experts in the *Mapworks* and NSSE surveys were contacted requesting their input on the applicability of the selected items to the constructs of spirituality and grit. Their input provided insights into how the variables were initially created, included a suggestion that the list for the grit items be shorter, and recommended that a method of factor analysis be conducted to determine whether the final list of variables was an adequate scale for measurement of the constructs (R. M. Gonyea, personal communication, November 4, 2016; S. Graunke, personal communication, November 10, 2016; S. Woosley, personal communication, November 3, 2016). Following receipt of this feedback, the items for each cohort were selected (see Appendix A, Tables A1-A9).

Subsequently, principle component analysis (PCA) was conducted to ascertain the strength of the selection of the variable sets chosen to represent spirituality and grit. Field (2009) recommended this method for establishing whether "linear components exist in the data and how a particular variable might contribute to that component" (p. 638). He further claimed that extensive studies have shown little difference between the results of PCA and confirmatory factor analysis (CFA) when the entire population is included, and the communalities (or the proportion of variation explained by that variable) between variables are reasonably high (≥ 0.7). The use of SPSS as a data analysis tool drove the decision to use PCA rather than CFA given Field's discussion of the differences between the two methods.

The results of this analysis supported the selection of the items used to represent spirituality and grit, and are summarized by cohort next, with further details provided in Appendix C, Tables C1-C18. For all cohorts, the assumption was made that the variables were

correlated; therefore, an oblique rotation (direct oblimin with a delta set to 0) was used for these analyses. In addition, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) statistic is based on the assumption that "values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb" (Field, 2009, p. 647). The Bartlett's measure looks for significance to determine whether factor analysis is appropriate. The anti-image correlation matrix looks for values of 0.5 or higher on the diagonal items to determine whether there is sufficient correlation between variables to create factors. Factors were labeled as Grit or Spirit, where variables primarily fall into either a grit or spirituality grouping, or Mixed where both grit and spirituality variables have combined into a single factor grouping.

For the 2004 cohort, the KMO measure of sampling adequacy was .813, and individual items all scored higher than .500 with one exception at .498 ("Discuss with students whose beliefs or values are different") (see Table C1) with an analysis *N* of 309 cases. The Bartlett's measure was significant at $p \leq .001$, indicating that correlations between items were sufficiently adequate to conduct a PCA analysis. Rotated factor loadings grouped items into five components, which have been identified as Grit 1, Grit 2, Spirit 1, Spirit 2, and Mixed. Details of the factor scoring for both the pattern and the structural rotations are shown in Tables C1 and C2. A total of 62.58 percent of variation was explained by these five factors.

For the 2005 cohort, the KMO measure of sampling adequacy was .880, and individual items all scored higher than .500 (see Table C3), with an analysis *N* of 2,448 cases. The Bartlett's measure was significant at $p \leq .001$, indicating that correlations between items were sufficiently adequate to conduct a PCA analysis. Rotated factor loadings grouped items into three components, which have been identified as Grit 1, Spirit 1 and Spirit 2. Details of the

factor scoring for both the pattern and structural rotations are shown in Tables C3 and C4. A total of 59.05 percent of variation was explained by these three factors.

The KMO measure of sampling adequacy for the 2006 cohort was .862, and individual items all scored higher than .500 (see Table C5), with an analysis *N* of 2,777 cases. The Bartlett's measure was significant at $p \leq .001$, indicating that correlations between items were sufficiently adequate to conduct a PCA analysis. Rotated factor loadings grouped items into three components, which have been identified as Grit 1, Grit 2, and Spirit 1. Details of the factor scoring for both the pattern and structural rotations are shown in Tables C5 and C6. A total of 63.65 percent of variation was explained by these three factors.

For the 2007 cohort, the KMO measure of sampling adequacy was .928, and individual items all scored higher than .500 (see Table C7), with an analysis *N* of 2,846 cases. The Bartlett's measure was significant at $p \leq .001$, indicating that correlations between items were sufficiently adequate to conduct a PCA analysis. Only one component, Mixed, was identified for the entire set of items, therefore a rotated matrix was not calculated. Details of the factor scoring for the single component are shown in Table C7. A total of 83.63 percent of variation was explained by this single component.

The KMO measure of sampling adequacy for the 2008 cohort was .847, and individual items scored higher than .500 with one exception ("Participated in activities to enhance your spirituality") at .434 (see Table C8), with an analysis *N* of 360 cases. The Bartlett's measure was significant at $p \leq .001$, indicating that correlations between items were sufficiently adequate to conduct a PCA analysis. Rotated factor loadings grouped items into six components, which have been identified as Grit 1, Grit 2, Grit 3, Grit 4, Spirit 1, and Spirit 2. Details of the factor scoring

for both the pattern and structural rotations are shown in Tables C8 and C9. A total of 66.18 percent of variation was explained by these six factors.

For the 2009 cohort, the KMO measure of sampling adequacy was .871, and individual items all scored higher than .500 (see Table C10), with an analysis *N* of 1,157 cases. The Bartlett's measure was significant at $p \leq .001$, indicating that correlations between items were sufficiently adequate to conduct a PCA analysis. Rotated factor loadings grouped items into two components, which have been identified as Grit 1 and Grit 2 (no spirituality items were included in the surveys for this cohort). Details of the factor scoring for both the pattern and structural rotations are shown in Tables C10 and C11. A total of 67.11 percent of variation was explained by these two factors.

For the 2010 cohort, the KMO measure of sampling adequacy was .609, and individual items scored higher than .500 with two exceptions: "Do well in your hardest course," at .412, and "Persevere," at .361 (see Table C12), with an analysis *N* of 34 cases. The Bartlett's measure was significant at $p \leq .001$, indicating that correlations between items were sufficiently adequate to conduct a PCA analysis. Rotated factor loadings grouped items into three components, which have been identified as Grit 1, Mixed 1, Mixed 2. Details of the factor scoring for both the pattern and structural rotations are shown in Tables C12 and C13. A total of 65.08 percent of variation was explained by these three factors.

The KMO measure of sampling adequacy for the 2011 cohort was .716, and individual items all scored higher than .500 (see Table C14), with an analysis *N* of 99 cases. The Bartlett's measure was significant at $p \leq .001$, indicating that correlations between items were sufficiently adequate to conduct a PCA analysis. Rotated factor loadings grouped items into four components, which have been identified as Grit 1, Spirit 1, Spirit 2, and Mixed. Details of the

factor scoring for both the pattern and structural rotations are shown in Tables C14 and C15. A total of 61.97 percent of variation was explained by these four factors.

For the 2012 cohort, running the complete selection of variables from the Mapworks 2012, Mapworks 2013, and NSSE surveys resulted in a failed condition due to the low number of respondents to all three surveys ($N = 8$). The analysis was rerun using just the Mapworks 2012 and NSSE variables. For this analysis, the KMO measure of sampling adequacy was .545. Slightly more than half of the items scored higher than .500 (see Table C16), with an analysis N of 23 cases. The Bartlett's measure was significant at $p \leq .001$, indicating that correlation between items were sufficiently adequate to conduct a PCA analysis. Rotated factor loadings grouped items into four components, which have been identified as Grit 1, Grit 2, Grit 3, and Spirit 1. Details of the factor scoring for both the pattern and structural rotations are shown in Tables C16 and C7. A total of 81.793 percent of variation was explained by these four factors.

In summary, based on the results of these principle component analyses, the variables this study used to represent the constructs of spirituality and grit aligned fairly consistently as factors within those categories, and provided a substantial level of confidence in their use based on the KMO and Bartlett's measures.

Methods of Analyses

The first steps of the analyses consisted of running descriptives of the population, and selecting the variables to be used to represent spirituality and grit, as previously described. Once selection of the variables was completed, these data were analyzed using bivariate correlation to investigate the relationships between each variable (spirituality and grit), then between the variables of spirituality and grit and years to graduation in order to answer the first two research questions. As illustrated in Figure 5, the level of significance from these first steps prompted the

development of a supplemental research question, wherein logistical models were constructed to analyze the predictive ability of the spirituality, grit, and combined spirituality and grit variables against a baseline model comprised of demographic and academic variables that have been traditionally used to analyze persistence and retention (that is, gender, Student of Color, high school GPA, first-year GPA, SAT math and verbal scores, GPA at graduation). Then, due to the high significance of graduation GPA within all models, a second supplemental research question was subsequently developed to analyze the predictive ability of spirituality, grit, and combined spirituality and grit variables upon graduation GPA compared to the baseline model, using linear regression. Following these steps, a separate analysis was conducted on the Senior survey data file to answer the third research question.

Finally, as shown Figures 5 and 6, the study included a session of qualitative analysis of the open-ended comments obtained from the Senior surveys using open coding following Charmaz (2014) and thematic analysis with constant comparison following Morse et al.'s (2009) discussion of grounded theory analysis methods. While multiple themes were present within this data, the thematic analysis concentrated on discovering items specifically related to the constructs of spirituality and grit. Further elaboration on the items identified with these analyses was done as part of the final discussion.

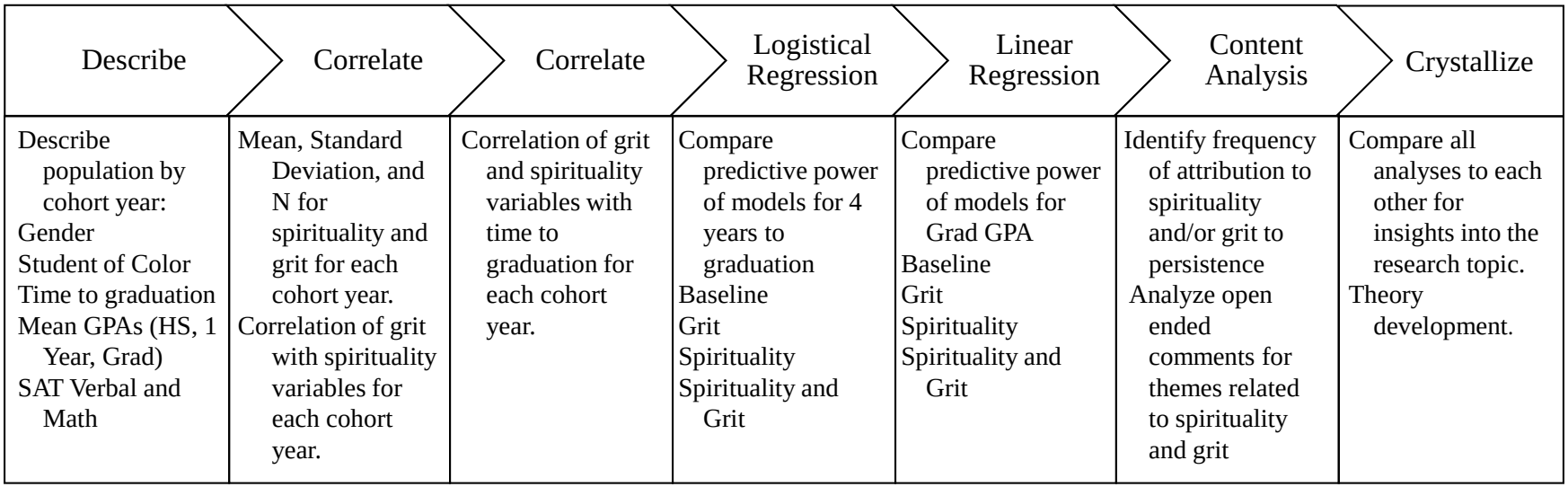


Figure 5. Logic flow for data analysis.

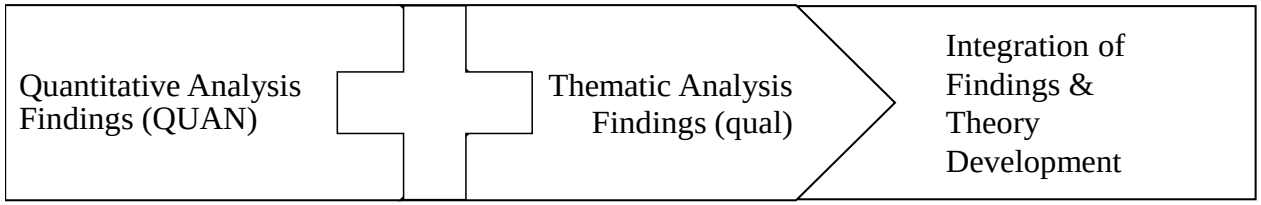


Figure 6. Logic flow for integration of quantitative and qualitative analyses.

This approach followed the method that Vogt et al. (2012) recommended for analyzing complicated data sets; namely, conducting multiple levels of analyses for research questions that seek to examine relationships from different angles in order to understand those relationships. In addition, this method of analysis was recommended by Vogt, Vogt, Gardner, and Haeffele (2014) for problems where the constructs being examined are not clearly independent or dependent variables, but a relationship between them is suspected. It further aligned with the recommendations made by Glaser and Strauss (1967) and Stern and Porr (2011) for conducting grounded theory research, where additional research questions were created when the data analyses suggested that further inquiry would have merit.

Findings from the multiple analyses were intersected using a convergent mixed-methods (QUAN-*qual*) approach (Morse & Niehaus, 2009) to provide the triangulation and crystallization approaches to understanding complex data (Denzin, 2012; Denzin & Lincoln, 2011; Ellingson, 2011: Hesse-Biber, 2010; Mertens & Hesse-Biber, 2013). Ultimately, the frameworks and perspectives of pragmatism, triangulation, crystallization, and grounded theory drove the findings from these analyses by allowing comparison of multiple types of data while looking at responses from the same population under different circumstances. This also addressed the concerns of voice, where time can change a single participant's voice from one note to another, yet reflects the wholeness of the participant's reality. The use of multiple cohorts of similar populations further expanded the ability of this study to theorize upon the data findings. This approach resulted in the development of theory about the interaction and intersection of spirituality and grit, and the application of that theory to the phenomenon of persistence to graduation, thereby expanding existing persistence theory.

Data Handling

The quantitative data set(s) were anonymized following IRB protocol after compilation by the Office of Institutional Effectiveness for use within this study. All electronic files were maintained on a computer that was accessible only by a password and was located in the researcher's locked office. No physical data were collected.

Summary of Chapter

In this chapter, the philosophical framework of pragmatism was described, along with the accompanying foci of triangulation, crystallization, and grounded theory that drove the subsequent study design (QUAN-*qual*) and approach to analyses of data. The purpose of the study, the population, setting, context, research questions and hypotheses, and data collection and handling methods were presented. The process of variable selection for this study was also elaborated. Finally, the methodological approach to the analyses for this study was outlined and couched in the philosophical framework driving the methods chosen to analyze the data. The next chapter presents the results of the analyses conducted using the methods outlined herein.

CHAPTER FOUR:

ANALYSIS AND RESULTS

This study explored the constructs of spirituality and grit in relationship to each other, and persistence to graduation using a graduation data set prepared by the Office of Institutional Effectiveness at Ball State University. In chapter 1 the problem statement, purpose, rationale and significance of the study, research questions and related hypotheses, brief definitions of the concepts included in the study, and the researcher's perspective were all addressed. Chapter 2 examined the theoretical foundation for this study, and reviewed the literature related to constructs of persistence, retention, student development, inner development, identity, self-authorship, spirituality, and grit. The methodology used for analysis in this study was described in chapter 3, including a discussion of the philosophical framework that drove the subsequent study design and approach to analyses of data. The purpose of the study, the setting, context, research questions and hypotheses, and data collection and handling methods were addressed, along with a description of how the final variable selection was made and verified using principle component analysis (PCA).

This chapter presents the findings of the analysis of the data. It describes the population and the items selected to represent the study variables. Descriptives of the demographic and academic characteristics of the population are presented. Following that, each research question is considered with a summary of the analyses conducted to address that research question and associated hypotheses. Results are described in both narrative and numerical (tables and figures) form. A summary of the overall analyses along with an introduction to the final chapter concludes this chapter.

Results

Demographic Characteristics of Population

This study used data collected by the Office of Institutional Effectiveness at Ball State University. Data included demographic information, academic records, the *Mapworks* survey, National Survey of Student Engagement (NSSE), and the Senior survey, and institutional records with student-specific graduation data. The full data set included all students entering as freshmen from 2004 through 2012, along with survey response data for each student where students could be linked to their responses (some of the *Mapworks* and NSSE surveys used non-standard student IDs which could not be aligned to the institutional student ID database). This provided the ability to examine eight cohorts of students who graduated within four years, seven cohorts of students who graduated within five years, and six cohorts of students who graduated within six years. A total of 32,736 students with 589 variables were included in this data set. For this analysis, a subset of the variables was chosen (as described in Chapter 3) based on the research questions.

Of the entire population, 18,623 students identified as female (57%), and 14,111 students identified as male (43%) (see Appendix D, Table D1). A majority of students identified as White (86.7%), with 10.6% identifying as a Student of Color, 0.3% as International, and 2.4% as Unknown (declined to respond to the question) (see Appendix D, Table D2).

Academic Characteristics of Population

Overall, 12,498 students (38.2%) graduated within four years, another 4,935 students (16.0%) graduated within five years, and 782 students (2.4%) graduated within six years (see Appendix D, Table D3). For the 2011-2012 cohorts, data for five- and six-years to graduation for students were not available because the fifth and sixth year of enrollment had not yet

occurred. A total of 7,330 students were not accounted for in these two cohorts. Of those for whom data were available, a total of 55.7% of the combined student cohorts graduated within six years.

When analyzed based on gender, female students showed higher percentages of graduation within four years over the entirety of all cohorts, with as much as 10% higher completion over male students in the four-year time frame. For years five and six male students increased their graduation percentages and were slightly higher than female students for most cohort years (see Appendix D, Table D4).

Numbers and percentage of time to graduation for Students of Color are shown in Appendix D, Tables D5 and D6. White students had stronger graduation percentages than Students of Color overall for all length of time to graduation, ranging from 34% in 2004 to 48.2% in 2012. The only group performing at a graduation percentage higher than White students were International students, but the low numbers of international students influenced this statistic.

Appendix D, Table D7 includes the mean High School (HS), First year in college (1 Year), and at time of Graduation (Grad) GPAs by time to graduation for each cohort year. The mean Grad GPAs for four-year graduating students ranged from 3.29 in 2004 to 3.33 in 2012, with highs of 3.35 in the 2006 and 2007 cohorts. The mean Grad GPAs for five-year and six-year graduates followed a downward trend in scores, with five-year GPAs ranging from 3.00 in 2004 to 2.99 in 2011, with a high of 3.06 in 2010. Six-year graduates' Grad GPAs were lower, ranging from 2.84 in 2004 to 2.82 in 2010, with a high of 2.87 in 2007. Similar patterns (although not expressed as strongly) were found between the HS and First-year GPAs.

SAT Verbal and Math scores are shown in Table D8. Again, a downward trend in these scores was noted over the four-year to six-year time-to-graduation range, with scores in the 530-range for both verbal and math scores at four-years, in the 510-520 range at five-years, and 495 to 510 range at six-years, with the 2010 cohort being somewhat of an anomaly with scores in the 520s.

Analyses of Data to Address Research Questions

In order to answer RQ1 and RQ2, correlational (Pearson's, Spearman's rho, and Kendall's tau_b) analyses were conducted on the primary data set. Non-parametric correlational analyses (Spearman's rho and Kendall's tau_b) for all cohorts were conducted by way of comparison to the Pearson's correlation. Where minimal differences occurred between the Pearson's and non-parametric analyses, with no changes in significance levels for any of the reported items, differences were not reported. When differences changed significance levels, they were annotated within each table. Following these analyses, two supplemental research questions were developed to further explore nuances of RQ2, and logistical and linear regression analyses were conducted to answer these questions. Separate descriptive and thematic analyses were conducted on the responses to the Senior survey to answer RQ3.

Is there a relationship (correlation) between spirituality and grit in college students?

Appendix D, Tables D9 through D25 provide details of the correlational analyses conducted for each cohort year (2004 through 2012) in order to address the question of whether there is a relationship between spirituality and grit in college students. Each cohort year includes two tables; the first with the mean, standard deviation, and count of survey respondents for each item; and the second showing the correlation coefficient for grit compared to spirituality items. Items in the first table were grouped according to whether they represented spirituality or grit.

The 2004 cohort showed positive correlational significance (Pearson's) between grit and spirituality items at the $p \leq .01$ level for the majority of items (46 of 77 comparisons). An additional six correlations were significant at the $p \leq .05$ level. One comparison showed negative non-significant correlation (see Tables D9-D10). Non-parametric correlational analyses showed minimal differences between items with no changes in significance levels.

The 2005 cohort showed positive correlational significance (Pearson's) between grit and spirituality items at the $p \leq .01$ level for the majority of items (36 of 40 comparisons). An additional two correlations were significant at the $p \leq .05$ level. Fewer items were included in this analysis because the NSSE survey was not conducted with this cohort (see Tables D11-D12). Non-parametric correlational analyses showed minimal differences between most items. The items showing differences in significance levels on the non-parametric analyses were annotated within each table.

The 2006 cohort showed positive correlational significance (Pearson's) at the $p \leq .01$ level for all items except one, "Mapworks factor: Commitment." Only one spirituality item, "Religious activities," was available for this analysis for this cohort because the NSSE survey was not conducted with this cohort and Mapworks changed many of the survey questions (see Tables D13-D14). Non-parametric correlational analyses showed minimal differences between items with no changes in significance levels.

The 2007 cohort showed positive correlational significance (Pearson's) at the $p \leq .01$ level for all items. Only one spirituality item, "Religious – Religiously oriented groups or activities," was available for this analysis for this cohort because the NSSE survey was not conducted with this cohort and Mapworks changed many of the survey questions (see Tables

D15-D16). Non-parametric correlational analyses showed minimal differences between items with no changes in significance levels.

The 2008 cohort showed a majority of items with no correlational significance, although differences were noted between responses to the same item for the Mapworks surveys conducted in the freshman year, and the following year, for first-time sophomores. In most cases, when two years of responses were available, the sophomore survey showed significance where the freshman survey did not (see Tables D17-D18). It is worth noting that most of the positive correlational significance between the grit and spirituality items occurred for the spirituality items that attribute an institutional contribution to the item. There were some differences in significance levels between Pearson's, Spearman's, and Kendall's, which have been annotated as noted within each table.

For the 2009 cohort, no survey questions related to spirituality were included in the Mapworks survey data in the data set, and the NSSE survey was not conducted with this cohort; therefore, no correlational analyses were conducted for this research question. Means, standard deviations, and the respondent count for grit items were reported in Table D19.

While over half of the items analyzed within the 2010 cohort showed slight negative correlations, no correlational significance was found between any of the spirituality and grit items (see Tables D20-D21). It should be noted that the *N* for the spirituality items (drawn from the NSSE survey) was substantially lower (approximately 1 percent) than the *N* for the grit items. Non-parametric analyses showed minimal differences between items with no changes in significance levels.

Slightly more than half of the items analyzed within the 2011 cohort showed positive correlational significance at either the $p \leq .01$ or $p \leq .05$ levels. Some non-significant negative

correlation was also found (see Tables D22-D23). When analyzed using the non-parametric scales, eight items increased in positive correlation to the $p \leq .01$ level of significance, two items increased to the $p \leq .05$ level of significance, one item increased to a negative correlation at $p \leq .05$, and one item decreased from $p \leq .05$ to non-significance.

The 2012 cohort showed two items with positive correlational significance at the $p \leq .05$ level, with the remaining items non-significant. Some non-significant negative correlation was also found (see Tables D24-D25). The non-parametric analyses changed one item from positive correlational significance at $p \leq .05$ to non-significant, and is highlighted.

In summary, within most cohorts the variables representing the constructs of spirituality and grit showed positive correlational significance with each other, supporting H_1: Spirituality and grit positively correlate in college students.

Do the constructs of spirituality and/or grit correlate with persistence to graduation? Appendix D, Tables D26 through D34 provides details of the correlational analyses conducted for each cohort year (2004 through 2012) to address the question of whether was a relationship between spirituality and/or grit with persistence to graduation. Each cohort year is presented independently. Where differences are noted between the Pearson's reported correlation and the non-parametric analyses (Spearman's rho and Kendall's tau_b), this has been annotated within each table.

The 2004 cohort showed significance at the $p \leq .01$ level for one item included in spirituality, "Religious activities," for all years to graduation (4, 5, and 6-years). Two other items within spirituality showed significance at the $p \leq .05$ level for the 4-years to graduation group. One item showed negative, but not significant, correlation. Within the grit construct, a majority of items showed significance at the $p \leq .01$ level for all years to graduation (9 of 11

items for every year) (see Table D26). Non-parametric correlational analyses showed minimal differences between items with no changes in significance levels.

The 2005 cohort showed significance at $p \leq .01$ for a majority of the items for the spirituality. Within spirituality, "Religious activities" was significant at $p \leq .01$ for all years to graduation. Other items in this category ranged from no significance for one year to varying levels of significance for all years. All grit items were significant at $p \leq .01$ for all years to graduation (see Table D27). As noted previously, fewer items were included in this analysis because the NSSE survey was not conducted with this cohort. Non-parametric correlational analyses showed minimal differences between items with no changes in significance levels.

The 2006 cohort showed significance at $p \leq .01$ for all years to graduation except "Mapworks Factor: Commitment" for spirituality and grit (see Table D28). For this cohort, only one item was available within the spirituality category, "Religious activities," because of substantial changes to the survey questions, and the NSSE survey was not conducted with this cohort. Non-parametric correlational analyses showed minimal differences between items with no changes in significance levels.

The 2007 cohort showed no significance for all years to graduation for both spirituality and grit (see Table D29). However, non-parametric correlational analyses showed substantial differences between it and the Pearson's analysis, with significance at $p \leq .01$ for all years to graduation on both Spearman's and Kendall's models. Further, the slight negative correlation for "Religious activities" on Pearson's reversed direction to a positive significant correlation in the non-parametric models. This difference has been noted with superscripts.

The 2008 cohort showed no significant correlation for all years to graduation for spirituality items, but showed positive significant correlation at $p \leq .01$ for all years to graduation

for a majority of the grit items (see Table D30). The only grit item not showing significance was a NSSE survey item, "Worked harder." Non-parametric correlational analyses showed minimal differences between items; those where significance levels changed have been noted with superscripts.

The 2009 cohort showed significant positive correlation for all years to graduation with the items from the freshman year survey; however, the same items from the sophomore survey showed no significance (see Table D31). On the other hand, non-parametric correlational analyses showed significant positive correlation for all items. These differences have been noted with highlights. Further, in some cases, the direction of correlation changed from negative to positive when analyzed on the non-parametric models, and has been annotated.

The 2010 cohort showed no significant correlation for the spirituality items on either the Pearson's or non-parametric scales. For the grit items, one showed significant positive correlation at the $p \leq .01$ level for all years to graduation ("Plans out your time") (see Table D32). One other item ("Is self-disciplined") showed significance at $p \leq .05$ for graduation in four years, and $p \leq .01$ for graduation in five or six years. A single item ("Persevere") showed significant negative correlation at the $p \leq .05$ level for graduation in four years. The non-parametric analyses found a number of differences from the parametric scale, with increased significance at $p \leq .01$ levels, and are highlighted accordingly. Further, in one case ("Do well"), the direction of correlation changed from negative to positive when analyzed on the non-parametric models; however, this instance was not significant in either direction for four years to graduation. For years five and six, this item increased in significance to the $p \leq .01$ level. For this cohort, the low number of cases analyzed suggests that findings may be somewhat less

reliable than for other cohorts. It may also explain the anomaly between the Pearson's and non-parametric analyses.

The 2011 cohort showed positive correlational significance at $p \leq .01$ for two items in the spirituality group ("Participated in activities to increase your spirituality" and "Institutional contribution: Understanding yourself"). None of the other spirituality or grit items showed significance when analyzed using Pearson's scale (see Table D33). However, non-parametric analyses found positive correlational significance at $p \leq .01$ for all but one of the grit items ("Worked harder"), which remained non-significant. The differences are highlighted for those items showing significance on the non-parametric scales. Year six was not available to calculate for this cohort because it had not occurred at the time of data set creation.

The 2012 cohort showed positive correlational significance at $p \leq .01$ for all but two items in the grit group, and the remaining two showed significance at $p \leq .05$ ("Is dependable" and "Do well") at four years to graduation (see Table D34). Neither of the two spirituality items for this cohort showed significance at four years to graduation. Years five and six were not available to calculate for this cohort because they had not occurred at the time of data set creation.

Within most cohorts, grit and spirituality showed some positive correlation with persistence to graduation, partially supporting H_5: Spirituality and grit significantly correlated ($p < .05$) with persistence to graduation.

Do the constructs of spirituality and/or grit contribute to a higher predictive model for persistence to graduation? Appendix D, Tables D35 through D52 provide details of the logistical regression analyses conducted for each cohort year (2004 through 2012) to address the first supplemental question that was developed following the finding of high levels of

significance in correlation between grit, spirituality, and persistence to graduation. The models used for these analyses consisted of Graduation at Four Years as the dependent variable, and the independent variables consisted of the traditional demographic and academic predictors of graduation success: Gender, Student of Color, GPA (HS, 1 year, at Graduation), and SAT Math and Verbal scores as the baseline model; baseline plus grit as a second model; baseline plus spirituality as a third model; and baseline plus grit and spirituality as a fourth model. Variables used in the model were the same ones used for the correlational analyses irrespective of significance levels. Findings for each model are described by cohort year.

For the 2004 cohort none of the models showed significant predictive power beyond the constant or baseline models; however, when grit and spirituality were individually added to the baseline model (66.7%), both showed improvements in prediction levels (78.0% and 76.4%, respectively) (see Table D35). Further, the grit and spirituality model showed further improvement in prediction levels (79.9%). Of the individual variables, very few showed any levels of significance in adding to the predictive power of the models. Two grit items showed significance, "Complete tasks on time" and "Ability to manage stress," in both the grit and grit and spirituality models (see Table D36). In addition, the Wald score for Grad GPA is substantially higher (up to 22 times) than the other significant variables in the baseline model. Other variables showing significance are included in Table D36 along with the model in which they showed significance.

For the 2005 cohort one model (Grit) showed significant predictive power at $p \leq .01$, with a prediction level of 67.7% (see Table D37). While none of the other models showed significance, all three models showed improvement in the predictive power of the baseline model (65.3%), with Spirituality at 66.3% and Grit and Spirituality at 67.5%. The individual variables

showed significance within each model are included in Table D38. The Wald scores for Grad GPA in all models are substantially higher (up to 11 times greater) than all other significant variables (a range of 39.928 to 52.489).

For the 2006 cohort, none of the models showed significant predictive power beyond the constant or baseline models; however, when grit was individually added to the baseline model (68.1%), it showed minor improvement in prediction level (68.2%), and when grit and spirituality were both added, they showed further improvement in prediction levels (68.6%) (see Table D39). The individual model of spirituality was slightly worse at prediction than baseline (67.5%). Few individual variables within the model showed any level of significance; those that did are included in Table D40 along with the model in which they showed significance. The Wald score for Grad GPA is 10 times higher than the other significant variable in the baseline model. For all other models in this cohort, Grad GPA is the sole significant variable.

For the 2007 cohort, none of the models showed significant predictive power beyond the constant or baseline model; however, when grit and spirituality were added to the baseline model (67.1%), both models improved the prediction level by the same amount (67.9%) (see Table D41). Further, the grit and spirituality model showed improvement beyond the individual models at 68.2%. One grit variable, "Plans out your time," showed individual significance contributing to the grit model at $p \leq .05$ (see Table D42). The Wald score for Grad GPA in the baseline model is substantially higher (up to 44 times) than all other significant variables in all models (a range of 156.492 to 180.658). All other variables showing significance are included in Table D42 along with the model to which they contributed.

For the 2008 cohort, none of the models showed significant predictive power beyond the constant or baseline model; however, when grit and spirituality were added to the baseline model

(69.6%), they both improved the prediction level at 83.8% and 81.8%, respectively (see Table D43). Further, the grit and spirituality model showed improvement beyond the individual models at 84.8%. This cohort showed the largest improvement in predictive power out of all cohorts examined in this research question. One spirituality variable, "Participated in activities to enhance your spirituality," showed individual significance contributing to the spirituality model at $p \leq .05$ (see Table D44). One grit variable, "Follows through," showed individual significance contributing to the grit and spirituality model at $p \leq .05$. The Wald score for Grad GPS in the baseline model is substantially higher (up to 10 times) than the other significant variable in the baseline model, but is roughly equivalent to other significant variables in other models. All other variables showing significance are included in Table D44, along with the model to which they contributed.

For the 2009 cohort, only the baseline and grit model analyses were able to be conducted because none of the surveys used in this data set included questions regarding spirituality. The grit model did not show significant predictive power beyond the constant or baseline model; however, it did show improvement in predictive power over the baseline model (69.7%) at 73.1% (see Table D45). Four grit variables were found to be significant within the grit model, with two at $p \leq .05$ and two at $p \leq .01$ levels (see Table D46). Grad GPA continued to be the highest predictor based on the Wald scale, with scores up to 10 times higher than all other predictors. All other variables showing significance are included in Table D46, along with the model to which they contributed.

For the 2010 cohort, only the baseline and grit model analyses were able to be conducted due to missing data and low respondent numbers for the spirituality variables which created a failure condition in SPSS. While the grit model did not show significant predictive power

beyond the constant or baseline model, it did show improvement in predictive power over baseline (73.0%) to 74.1% (see Table D47). The Wald score for Grad GPA was substantially higher (up to eight times) than other significant variables contributing to the baseline and grit models (see Table D48). All other variables showing significance are included in Table D48, along with the model to which they contributed.

For the 2011 cohort, the spirituality model showed significance at the $p \leq .05$ for predictive power beyond the constant and baseline model, with an improvement in prediction from 80.1% for the baseline model to 90.9% for the spirituality model (see Table D49). Further, this cohort showed the highest levels of predictive power out of all other cohorts (92.3%) for its models. While the grit and grit and spirituality models were not significant, they also showed improvement over baseline, with scores of 85.4% and 92.3%, respectively. Grad GPA continued to have the highest Wald scores, exceeding other predictors by as much as 13 times higher (see Table D50). All other variables showing significance are included in Table D50, along with the model to which they contributed.

For the 2012 cohort, only the baseline and grit model analyses were able to be conducted due to missing data and low respondent numbers for the spirituality variables which created a failure condition in SPSS. Further, Grad GPA was not included in the baseline model (see Table D51 note). The baseline model showed significance at $p \leq .05$ for predictive power, with a 72.2% level of prediction (see Table D51). While the grit model did not show significance, it improved the level of prediction to 74.3%. Two grit variables were significant within the grit model at $p \leq .05$ levels (see Table D52). For this cohort, first year GPA had the highest Wald scores with the grit model at 47.783 and the baseline model at 369.960. All other variables showing significance are included in Table D52, along with the model to which they contributed.

For almost all the cohorts, while the grit, spirituality, and grit and spirituality models were not significant beyond the baseline predictive model, most showed improvement in prediction levels beyond the baseline model, some to a substantial amount. Multiple variables within each model showed significance in contributing to the predictive power of each model.

Do the constructs of spirituality and/or grit correlate with or contribute to a higher predictive model for GPA at graduation? Given that GPA at graduation was the strongest predictor of graduation in the logistics analysis models, yet it is not calculated until the point of graduation, a second supplemental question was developed to determine whether grit and spirituality positively correlate with Grad GPA, or contribute to predicting Grad GPA. Appendix D, Tables D53 through D79 provide details of the correlational and linear regression analyses conducted for each cohort year (2004 through 2012) to address this question. The models used for these analyses consisted of Grad GPA as the dependent variable, and using independent variables consisting of the traditional demographic and academic predictors of graduation success: Gender, Student of Color, GPA (HS and 1 year), and SAT Math and Verbal scores as the baseline model, baseline plus grit as a second model, baseline plus spirituality as a third model, and baseline plus grit and spirituality as a fourth model. Variables used in the model were the same ones used for the correlational analyses irrespective of significance levels. Findings for each model are described by cohort year.

For the 2004 cohort, almost half of the spirituality variables showed significant positive correlation at $p \leq .01$ with Grad GPA, and another variable showed significance at $p \leq .05$ (see Table D53. One variable showed slight negative non-significant correlation. All but two of the grit variables (Manage Stress and Worked Harder) showed significant positive correlation at $p \leq .01$. When analyzed on the non-parametric scale, one of the spirituality variables (Develop

Own Values) improved from non-significant positive correlation to significant correlation at $p \leq .05$. When the linear regression models were analyzed, only the baseline and grit models showed significance (see Table D54), at $p \leq .001$ and $p \leq .05$, respectively. The variables that showed significance within all four models are summarized in Table D55. High school and first year GPA are consistently among the significant predictors in all models for this cohort.

For the 2005 cohort, two of the four spirituality variables showed significant positive correlation with Grad GPA; one at $p \leq .05$ and one at $p \leq .01$ (see Table D56). Of the grit variables, the majority showed significant positive correlation at the $p \leq .01$ level, two showed significant correlation at $p \leq .05$, and one showed slight positive non-significant correlation. The linear regression models for this cohort were significant at $p \leq .001$ for baseline and $p \leq .01$ for grit, with the other two models not showing significance (see Table D57). Gender, high school and first year GPA are among the significant variables for all models, and three items from the grit set were found to be significant at $p \leq .01$ in the grit model (see Table D58).

For the 2006 cohort, most variables showed significant positive correlation with Grad GPA at the $p \leq .01$ level (see Table D59). Only the baseline model was significant in this linear regression analysis (see Table D60). Gender, high school and first year GPA were among the significant variables in all models (see Table D61).

For the 2007 cohort, neither the spirituality nor grit variables significantly correlated with Grad GPA (see Table D62). They all showed a slight negative non-significant correlation on the Pearson's scale. However, when analyzed on the non-parametric scales, all the variables changed direction and were significantly correlated at the $p \leq .01$ level. Both the baseline and grit models showed significance in the linear regression analysis at $p \leq .01$ (see Table D63).

Gender, high school and first year GPA were among the significant variables for all models, and two items from the grit set were found to be significant at $p \leq .01$ (see Table D64).

For the 2008 cohort, one spirituality variable ("Participated in activities to enhance your spirituality") was significantly positively correlated with Grad GPA at the $p \leq .01$ level (see Table D65). With one exception ("Worker harder") all the grit variables showed a positive significant correlation at the $p \leq .01$ level. In this cohort, only the baseline model was significant at $p \leq .001$ (see Table D66). Gender, high school and first year GPA were significant variables within all models (see Table D67).

No questions were included in any surveys regarding spirituality for the 2009 cohort (see Table D68); therefore, no analyses were made for this construct. The grit variables showed significant positive correlation with Grad GPA at the $p \leq .01$ level for the survey conducted when this cohort was in its freshman year, but showed no significant correlation for the sophomore year survey on the Pearson's scale. However, when analyzed using the non-parametric scales, they showed a positive significant correlation at the $p \leq .01$ level. The linear regression analysis showed significance for only the baseline model at $p \leq .001$ (see Table D69). Gender, high school and first year GPA were significant for both models that were run on this cohort (see Table D70).

For the 2010 cohort neither the spirituality nor grit variables showed significant correlation with Grad GPA on the Pearson's scale (see Table D71). However, when analyzed using the non-parametric scales, all the grit variables except two ("Do well" and "Persevere") showed significant positive correlation at the $p \leq .01$ level, with some items changing from a slight insignificant negative correlation to a positive direction. The linear regression analysis conducted with this cohort showed the baseline model significant at $p \leq .001$, and the grit model

significant at $p \leq .05$ (see Table D72). First-year GPA was significant in all models, and one grit item (Self-Disciplined) was significant in the grit model (see Table D73).

For the 2011 cohort one spirituality variable ("Participated in activities to increase your spirituality") positively correlated with Grad GPA at the $p \leq .01$ level, and the rest showed no significant correlation (see Table D74). Only one grit variable showed significant positive correlation in the Pearson's analysis at the $p \leq .05$ level ("Worked harder"); however, when the remaining grit variables were analyzed on the non-parametric scales, they all showed significant positive correlation at the $p \leq .01$ level, with some changing from slight negative non-significant correlation to a positive direction. Within this cohort the linear regression analysis showed the baseline model significant at $p \leq .001$, and the grit model significant at $p \leq .05$ (see Table D75). First year GPA was significant for all models at $p \leq .001$, and two grit items were significant within the grit model: "Follows through" at $p \leq .001$, and "Is dependable" at $p \leq .05$ (see Table D76).

For the 2012 cohort neither of the spirituality variables positively correlated at a significant level with Grad GPA; however, all the grit variables correlated significantly at the $p \leq .01$ level (see Table D77). This cohort showed only the baseline model significant at $p \leq .001$ in the linear regression analysis (see Table D78). The spirituality model and the combined grit and spirituality model could not be run due to excessive missing data. Within each model, gender, Student of Color, high school and first year GPA were all significant variables (see Table D79). One grit item, "Persevere on class projects," was significant at $p \leq .05$ within the grit model.

For all cohorts, some positive correlation between grit and spirituality variables and Grad GPA was found. Results of the linear regression showed limited predictive power in any models

beyond baseline, although the grit model was found to be significant in some cases. Some grit and spirituality models were found to be significant within the model itself, contributing to the predictive power of the model.

How often do students attribute their persistence to graduation success to the presence of spirituality and/or grit in their college experience? Seniors were asked to designate which of a list of items contributed to their persistence to graduation on the 2012 cohort's Senior survey (or, for those seniors who belonged to the freshman 2012 cohort who graduated in 2016). Of the entire cohort of 3,494 seniors, 1,089 responded to the entire survey, for a response rate of 31 percent. Of the respondents, approximately 9 percent (96) attributed their persistence to grit (see Appendix D, Table D80). Spirituality or religious growth received 88 responses, for 8 percent of respondent's selections. Other related items such as identity development and sense of life purpose totals represented 16 percent of respondents' attribution to persistence. When asked to rank the items selected, most of the items within the grit or spirituality spectrums were placed at greater than 50 percent in the top three ranks. All items included in the survey that are closely related to grit and/or spirituality are detailed in Table D80.

Seniors were also asked in all Senior surveys from all cohorts (prior to the addition of the items to the 2016-2017 version of the survey) to comment on their experiences at the university. These comments were reviewed to determine whether any attribution was made to grit or spirituality related to their time spent at the university. A total of 20 comments were identified as related to grit, and 10 comments related to spirituality (see Appendix D, Table D81), out of the total 2,646 comments across surveys of seniors from 2010 through 2016. With respect to spirituality, one student commented "*My time here has given the opportunity to grow academically, intellectually, and spirituality*." Another stated "*I have grown so much as a*

person, in my faith, in cultural diversity, in acceptance of people for their differences, in my finances, and just as an individual." Others referred to the processes of maturing, finding themselves, and direct attribution to God for the opportunities they found at Ball State.

Within the area of grit many students cited periods of hardship that they overcame to reach their goal of graduation. Respondents included stories about homelessness, unplanned pregnancy, raising a family, working and going to school simultaneously, and personal ethics of hard work. One stated "*Even though I experienced many hardships along the way, I am proud to have been a student at Ball State.*" Another talked about overcoming failure and associated learning experiences, "*My time at Ball State has been filled with failure. But I have learned from those failures and am now better prepared for life because of them. Thank you.*" Finally, one respondent commented on the nature of changed goals and the impact on the time they spent to get to the point of graduation:

> *For me, college has been a rough few years. Life hit me with some hard things throughout this time. . . . Six and a half years of college was not what I planned for myself. I am on a completely different path than I would have chosen.*

Summary of Chapter

This chapter described the results of the analyses conducted on the data used by this study. Population characteristics and student demographics were presented, followed by the results of the analyses of the three research questions. Nine cohorts of students (2004 to 2012 inclusive) were examined for correlation between grit, spirituality, and graduation success. Two supplemental research questions were developed to further explore the nuances of the data, including whether the variables of grit and spirituality had any predictive power beyond the traditionally-used academic predictors of graduation success. Results from the thematic analysis of comments made on the senior survey were also described. These findings were presented in

narrative and table formats. A discussion of these findings with subsequent theoretical development is presented next, in Chapter Five.

CHAPTER FIVE:

SUMMARY, THEORY DEVELOPMENT, DISCUSSION, AND CONCLUSIONS

This study explored the constructs of spirituality and grit in relationship to each other and persistence to graduation using a graduation data set prepared by the Office of Institutional Effectiveness at Ball State University. Spirituality and grit are difficult to describe, yet researchers (e.g., Astin, Astin, & Lindholm, 2011a, 2011b; Chickering, Dalton, & Stamm, 2006; Duckworth, Peterson, Matthews, & Kelly, 2007) have documented that both constructs provide vast amounts of meaning and motivation in people's lives. Personal experience with both contributed to this researcher's persistence story, and that led to an inquiry as to whether a relationship might exist between these two constructs for others. Therefore, this study sought to discover whether there was a relationship between the two, and if either or both had a relationship to persistence in college student population.

In chapter 1 the problem statement, purpose, rationale and significance of the study, the research questions, related hypotheses, brief definitions of the concepts included in the study, and the researcher's perspective were all addressed. The theoretical foundation for this study, and a review of the literature related to constructs of persistence, retention, student development, inner development, identity, self-authorship, spirituality, and grit were examined in chapter 2.

The methodology used for this analysis was described in chapter 3, including a discussion of the philosophical framework that drove the subsequent study design and approach to analyses of data. The purpose of the study, the setting, context, research questions and hypotheses, and data collection and handling methods were addressed, along with a description of how the final variable selection was made and verified using principle component analysis (PCA). In chapter 4 the results of the analyses conducted on the data used by this study were described. Population

characteristics and student demographics were presented, followed by the results of the analyses of the three research questions. Two supplemental research questions were developed to further explore the nuances of the data. Results from the thematic analysis of comments made on the senior survey were also described. Findings were presented in narrative and table formats.

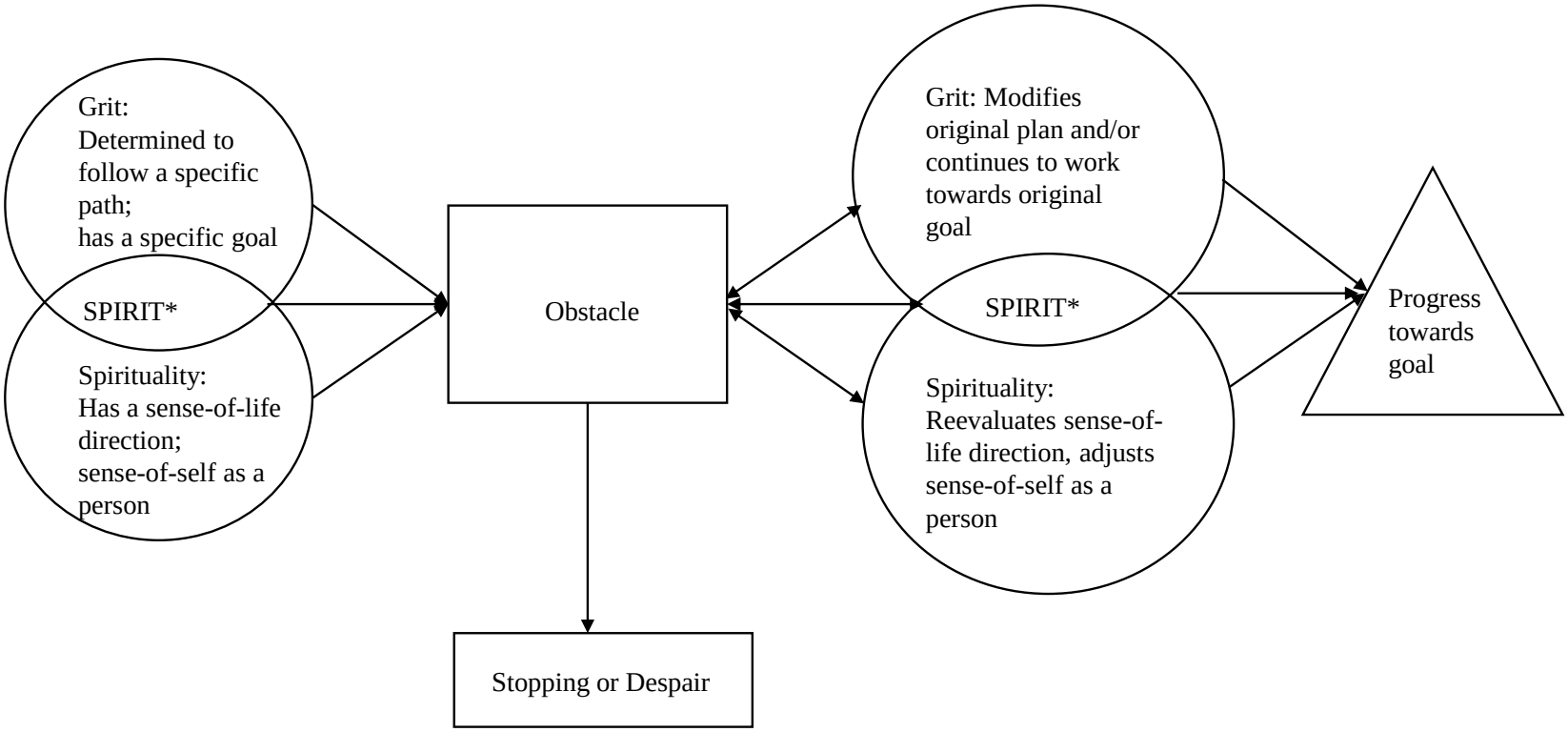
In this chapter, a theory and model are presented describing the relationship between grit and spirituality supported by the findings of this study, and are accompanied by a discussion of how the findings contributed to the theory and model. This theory and model are then applied to the specific goal of persistence to graduation as represented by the Bean and Eaton (2000) Psychological Model of Student Retention. Limitations are addressed. Recommendations for further research based upon this theory and the findings of this study conclude this chapter.

Building a Theory

Both spirituality and grit have been linked to better progress towards and achievement of goals. The findings from this study supported the development of a theory that these constructs often intersect and interact with each other. As they intersect and interact a stronger sense of direction and purpose often develops, which in turn may lead towards more success in pursuing goals that people have set for themselves. However, some researchers have cited conflicting data where people who have measured high in spirituality and/or grit failed to pursue specific goals, complicating the understanding of the contribution of spirituality and/or grit to goal achievement. As noted in the discussion of findings, next, this theory and model accounts for all states of progress or failure to progress towards a specific goal. Where spirituality and grit intersect will be defined as SPIRIT (SPIrituality-gRIT) for the purposes of this study.

The term SPIRIT acknowledges the drive and passion that is often associated with both spirituality and grit. Synonyms found in Roget's online thesaurus for the word spirit include

courage, enthusiasm, motivation, frame of mind, and life force (Spirit, n.d.). The usage of this term to represent this theory includes these synonyms, along with the concepts of determination, positive thinking, persistence, or the quintessential 'git 'er dun' approach to life. It is reminiscent of the cheerleading chant "We've got spirit; yes, we do. We've got spirit; how about you?" often shouted as encouragement to players and observers to enthusiastically play or become involved with the game. It also acknowledges the presence of a sense of direction driven by feelings of self-efficacy, having a life mission, and/or acknowledging the contribution of a higher power of some sort to a goal or life direction. Therefore, SPIRIT represents the intersection, interactive, and iterative process that occurs between the separate states of spirituality and grit in working towards a goal, along with the overlapping attributes that have been associated with both constructs. This theory is illustrated in the model in Figure 7. Following the illustration of the model is a discussion of the findings from this study and how each research question contributed to the theory and model found in Figure 7.



*A state of equanimity, determination, belief in ability to achieve, resilience, the result of the intersection of Spi(rituality) and (G)rit.

Figure 7. SPIRIT: The intersection, interactive, and iterative process of spirituality and grit in working towards a goal.

Discussion of Findings

This discussion explores the context and meaning of findings for each research question as they were positioned compared to other research in the areas of spirituality, grit, and persistence towards graduation from college. It examines the intersection of the constructs of spirituality and grit and situates this context in the model illustrated in Figure 7. It further addresses the implications of these findings as they pertain to the specific objective of persistence to graduation, and couches them in the context of the theory and model outlined previously.

Significant correlation was found between spirituality and grit in college students.

The analysis showed significant correlation between the variables representing the constructs of spirituality and grit on either or both of the Pearson's and the non-parametric scales for most of the cohorts examined. This supported the hypothesis that there is a relationship between spirituality and grit in college students within the population used in this study. While Field (2009) pointed out that given sufficient numbers, almost anything can correlate with anything else, in this case the high levels of significance between spirituality and grit suggest that something else is at work here. Both constructs have been placed within the overarching umbrella of psychological attributes. A discussion of these attributes, next, illuminates the meaning that can be derived from the finding of correlation between them. Exploring this relationship in terms of how the two constructs have been defined in the past helps to clarify how and where the two constructs intersect and what their potential is for impacting each other.

Spirituality. Chang and Boyd (2011) described spirituality as being "intimately interconnected" (p. 31) with personhood, or the essence of one's self in all its manifestations in all walks of life. Nash and Swaby (2011) portrayed it as a "salient . . . need to ponder the

imponderable" (p. 116); to sort out, among other things, the question of, "is there something more to life, to *my* life, that gives it purpose and rationale?" They defined spirituality as the thing that allows a person to "lift a veil and help us see our lives as if for the first time. We become aware that there is a deeper meaning to existence" (p. 117). They also claimed that as students explore their motivations to pursue a specific major, they develop greater personal meaning in their studies, as part of a spiritual foundation, as it were, for future work in the associated fields. Morris, Smith, and Cejda (2003) found that students who were "more satisfied religiously with their colleges were more likely to persist than their peers who were less satisfied religiously" (p. 345).

In other research, and after recounting all the measures they developed—based upon previous research—to define spirituality traits within the HERI study of spirituality in college students, Astin et al. (2011b) claimed that *equanimity*, or the "extent to which a student is able to find meaning in times or hardship, feels at peace or is centered, sees each day as a gift, and feels good about the direction of her life" (p. 20) may be the "prototypic defining quality of a spiritual person" (p. 142), and that it "shapes how [students] respond to their experiences, especially experiences that are potentially stressful" (p. 61). They found that as students developed equanimity over their college years, the growth in this area had "positive effects on a wide range of other college student behaviors, abilities, and feelings" (p.143) including better GPA, a sense of well-being, and satisfaction with college.

Spirituality has also been connected to personal growth (Cadell, 2012). It can provide a foundation for generating meaning and finding direction, or give an individual motivation to work to achieve specific life goals—or engage in a *spiritual quest*—as described by Astin et al. (2011b). Both Cadell and Astin et al. described conditions where individuals encountered a

period of difficulty or loss that returned them to a reassessment of spirituality in their lives, and subsequently gave these individuals the ability to address the difficulty and the strength to continue working towards some objective in their lives. These findings lead into the discussion of grit.

Grit. Duckworth et al. (2007) argued that grit involves both passion and perseverance. Building upon that argument, Tiittanen (2014) explored the idea that grit relates to aspects of a person's sense of well-being, and concluded that "being gritty about one's goal pursuits requires both a sense that the world is coherent and an authentic connection with the self in order for it to fully benefit well-being" (p. 2). A follow-up study conducted by Vainio and Daukantaite (2016) confirmed that grit was "positively related to all well-being factors and SOC [sense of coherence] and authenticity were significant mediators" (p. 2120).

Von Culin et al. (2014) pointed out that grit has two primary facets that comprise the construct, those of effort and interest. They explored the individual differences that might arise from the intersection of motivational directions and the facets of grit. They found that those individuals who approached happiness from the perspective of finding meaning and engagement were more likely to be gritty than those who sought happiness through pleasure. They elaborated that "an orientation toward engagement may promote grit by encouraging sustained effort over time, whereas an orientation toward pleasure may impede grit by discouraging sustained interests over time" (p. 310). Bowman, Hill, Denson, and Bronkema (2014) also studied the aspects of effort (or perseverance) and interest that are associated with grit, and found that grit predicted "a wide array of outcomes and experiences" apart from 'traditional achievement outcomes," including that "grittier students were more satisfied with college, had a greater sense of

belonging, engaged in more co-curricular activities, and even reported more interactions with faculty" (p. 15).

In a meta-analytic synthesis of research that has been done on grit, Credé, Tynan, and Harms (2017) found that grit had a stronger correlation with conscientiousness than with other personality traits, and was only moderately correlated with performance and retention. Their review of the research suggested that the grit-performance relation may be moderated by other things. They claimed that having high levels of grit may not be useful or adaptive unless it is also coupled with "the ability to engage in the type of reflection and self-monitoring that the self-regulated learning literature . . . and the social-cognitive view of learning . . . has identified as important determinants of learning and performance" (p. 493). Here is where an examination of the intersections between the constructs proves useful.

Intersections. Based upon the research findings about spirituality and grit from other studies, coupled with the findings of correlation between these constructs in this study, there appears to be an overlap between the psychological characteristics that would allow a person to define him or herself as being spiritual and/or being gritty. Farias and Hanse (2008) suggested that people who score higher on spirituality scales may be psychologically different than those who score lower. The work that has been done on grit, as cited above, is particularly important in providing understanding of how a search for meaning—generally considered to be an essential part of the spiritual experience—could then turn into someone who approaches life in a grittier fashion. Identity development is often associated with spiritual growth, but Baxter Magolda (2009) pointed out that students with strong identity development often have a stronger sense of purpose, which could be called grit.

If, as Astin et al. (2011b) claimed, equanimity is an essential part of spirituality, that *sense or ability to find meaning despite hardship* which describes the state of one's spirituality could, in turn, drive that individual towards a goal they have established and have determined to accomplish no matter the obstacles they find in their path *because* they have found meaning in that path. Or, as Tiittanen (2014) concluded, "grit might reflect a consistency of self . . . which has been shown to be particularly high in flourishing individuals" (p. 37). Tittanen further elaborated that due to the nature of grit being a passion and perseverance towards long-term goals, the requirement that a gritty individual has "a stable connection to the self" (p. 38) would be critical to fluidly adapt to the twists and turns in life that a long-term goal might encounter. Hence, one's spiritual foundation and personal sense of self and life-meaning could turn into a grittier approach to life. This would align with Credé et al.'s (2017) analysis of grit and their claim that the presence of self-reflection is critical to enable grit to be adaptive and responsive to changes in one's situation. Self-reflection, in turn, is often presented as a way for individuals to find meaning in their lives (e.g., Palmer, 1998; Parks, 2011), circling back to Astin et al's contention about the relevance of finding meaning to one's spirituality.

This connection between spirituality and grit is supported by studies that have been done in the field of social work where researchers examined the coping strategies people used to deal with life challenges. Gockel (2009) conducted a narrative study to examine participants' experiences with spirituality for healing, and found they "emphasized the role of spirituality in reconstructing positive meanings in the face of crisis" (p. 217). Coholic (2012) cited other scholars where spirituality was associated with coping strategies, and described as a key component of resiliency. Kegan (1982, 2000) argued that as individuals make meaning they draw from multiple aspects of their personal lives which interact and intersect creating new

patterns of thought and behavior. This connection is also supported by the concept of self-authorship, where, as Wawrzynski and Pizzolato (2006) described, students addressed the crossroads in their lives through creating internal foundations upon which they shaped their life choices and determined their direction. Cooper (2014) found that grit was positively associated with self-efficacy, which is often connected to self-authorship and coping strategies.

The intersection of spirituality and grit in goal making is also worthy of note. Hersh et al. (2008) stated that goals help students focus and encourage resilience "when confronted with obstacles" (p. 16). Kennedy (2013) reviewed factors driving persistence and asserted that students' values underlie the motivation to persist based on where academic goals fall in their priority lists. Emmons (2005) found that spiritual goals were associated with higher subjective well-being which, in turn, contributed to greater life satisfaction and meaning. Yeager, D'Mello, Paunesku, Spitzer, and Duckworth (2013) concluded that grit was operational in persistence to a goal so long as the individual felt the goal was worthwhile. Zhivotovskaya (2009) argued that when people believe they can overcome obstacles their mindset allows them to adapt enough to change and succeed. The pursuit of "engagement and meaning" was described by Von Culin et al. (2014) as "motivational correlates of grit," which "facilitate[d] sustained effort over time" (p. 6).

Building upon these findings suggests that spirituality and grit work together which often results in improved patterns of persistence towards a goal. From the spirituality perspective, as a person defines a life meaning and direction, she may become determined to pursue that direction, developing or increasing grit in that pursuit. From the grit perspective, when a person determines that a direction or goal is important in his life, he may find that decision builds a stronger sense of identity and meaning for life outside of his immediate world view, thereby

developing or increasing a sense of spirituality in the process. As the pursuit of the goal proceeds, a person might find herself revisiting the spiritual core to push through a particularly difficult obstacle, or reexamine the goal from the grit perspective, thereby finding both inner strength and additional grit to continue moving forward. This interaction of spirituality and grit may iterate multiple times throughout the pursuit of a goal (see Figure 7). Further, where individuals are working from the perspective of the intersection of the two constructs, or the area identified as SPIRIT, they may find their progress towards a goal to be more successful than if they are within an individual construct. Therefore, this process would support the finding of significant correlation between the two constructs, which was found in this study. This would also explain why many studies have found that people who encounter obstacles as they work towards goals tend to be grittier than those who have an easier time reaching goals.

Some positive correlation was found between spirituality, grit, and persistence to graduation for college students.

For this research question, the analyses showed some positive correlation between spirituality, grit, and persistence to graduation, partially supporting the hypothesis that spirituality and grit significantly correlated with persistence to graduation. Overall, these findings of correlation are supported by other studies of the impact of spirituality and grit on success in achieving a specific goal. Komarraju, Karau, and Schmeck (2009) found that personality traits including grit and emotional stability "are important influences on academic achievement" (p. 50). While the mention of grit is self-explanatory, emotional stability is often associated with spiritual development, as described by Astin et al. (2011b) in their definition of equanimity. Tisdell (2003) claimed that understanding one's self—a contributor to emotional stability—falls within the scope of spirituality. Resilience has been described as an element of

both spirituality and grit (Coholic, 2012: Hersh et al., 2008; Timmerman, 2014, Van Hook, 2013). Passion and optimism, while often associated with spirituality, have been defined as aspects of grit that contribute to pursuit of a goal (Doskoch, 2005). Hart (2012) identified multiple factors associated with persistence that were more related to the psychological aspects of a student's college experience, including personal growth. Multiple researchers have cited the influence of spirituality and grit upon persistence to graduation (e.g., Braxton, 2000; DeWitz, Woolsey, & Walsh, 2009; Duckworth et al., 2007; Melguizo, 2011; Tinto, 2012). Thus, finding positive correlation between these constructs and the graduation goal is reasonable, and falls within the scope of the model described in Figure 7, where spirituality and grit interact with each other to make progress towards the final goal—in this case graduation.

However, the findings of non-correlation, and, in some cohorts, negative correlation, bear further consideration. In some cohorts, the variable of "Develop your own values and ethics" showed some evidence of negative correlation with persistence (see Tables D26, D30, and D32). Parks (1986) lent insight into this phenomenon in her discussion of the angst and pain some students experience when confronted by a disconnect between a student's original belief system – particularly when based upon parents or other authoritarian figures – and a student's developing belief system. If the realignment of a student's belief system is not quickly resolved, it can play a role in slowing down the progress towards graduation, particularly if that realignment ends up with a period of stop-out or changes in a major. Wawrzynski and Pizzolato (2006) likewise noted that a state of disequilibrium pushes students into the self-authorship mode, but that too much disequilibrium may "temporarily stagnate development" (p. 690) if students are not able to successfully manage the intensity of that state. This could also slow progress towards graduation, and is depicted by the theoretical model. Further, Kennedy's

(2013) point about how an individual prioritizes goals also applies here. Does a student put other goals ahead of academic success and graduation from college? If, during a reassessment of values and ethics, a student determines that the goal of graduating from college is not one he wants to continue working towards, that could negatively impact persistence.

These states are also depicted in Figure 7, where the individual confronts an obstacle, goes through a re-evaluative period, and revisits the original goals. In some cases, the period of reevaluation may end up returning the individual to the original path. For others, it may mean modifying the original path or goal in some way. Kennedy (2013) argued that the values students hold may generate "competing and conflicting" (p. 183) goals which would tend to create additional iterations through the SPIRIT cycle as the individual resolves the conflicts and clears out the path towards the goal that is finally identified as most important to pursue. Age may also influence this finding; Duckworth et al. (2007) found that grit increases with age. Younger students may find that they spend more time iterating through a re-evaluation of their life goals. The condition where a person determines that the goal is not one he or she wants to or is able to pursue is illustrated in the model as dropout or despair. An individual may stay in the dropout or despair state, or may return to the beginning of the path after a period of reassessment.

For example, both a stop-out and changes in major occurred in this researcher's persistence story as I struggled to reassess my positionality with what I had been taught and what I felt was right for me. However, once I determined what I wanted my final path to be, my spiritual belief that education was of eternal significance contributed to my determination to complete my undergraduate degree, and gave me the grit to push through. The resulting sense of *rightness* placed me in a state of SPIRIT which drove me to the point of graduation. It may be

that the findings of non-correlation and negative correlation in this study are examples of situations where students were still iterating through the model, or had reached a point of drop-out or despair, thereby delaying or stopping movement towards their graduation goal.

The supplemental questions analyzed in conjunction with this original question considered whether spirituality and grit had any predictive power in persistence to graduation. While significance was not found for the majority of cohorts, when these variables were added to the baseline analysis model that is traditionally used to predict graduation success (academic variables), both the individual and combined grit and spirituality analysis models showed improvement in prediction over the baseline model for a majority of cohorts. Further, the grit and spirituality combined analysis model added additional predictive power beyond the individual grit or spirituality models. These analyses further support the argument that spirituality and grit may work together to create an accumulative effect on persistence, as illustrated in Figure 7.

College students attributed persistence to graduation to spirituality and/or grit.

In the spring 2017 Senior survey, graduating seniors were asked to select from a list of factors they felt had contributed to their ability to persist to the point of graduation (see Appendix D, Table D80). Approximately one-third of these graduates responded to this survey (31%). Of those, between 8 to 16 percent attributed spirituality and/or grit to their persistence success (based upon the assignment of analyzed variables to the categories of spirituality and/or grit). The items of a sense of life purpose, identity development, and identifying values all scored at 15 percent or higher. When respondents were asked to rank the items they chose, all items related to spirituality and/or grit placed higher than 50 percent in the top three selections with two exceptions (self-authorship at 39.7% and spiritual mentor at 47.8%). Given that self-

authorship is not a traditionally-used term among undergraduates, this may have impacted selection of this item in the top three; however, the item still scored at 8.4 percent of the total items selected. Identity development and spiritual or religious growth both scored at 62 percent in the top three items when ranked. Grit and sense of life purpose were next highest, both at 58.2 percent.

These findings demonstrate that respondents are aware of the role that spirituality and grit played in their lives as they have achieved their goal of graduation. For those that chose these factors, more than half of respondents placed them in the top three in importance related to their success. Additionally, the presence of comments citing the role of spirituality and grit in their academic work in response to a non-directed request for additional comments about their educational experience further underscores that these constructs are impacting persistence. Researchers have noted that student interest in matters related to their spirituality and self-identity development has increased over the last couple of decades (e.g., Astin et al., 2011a, 2011b; Jablonski, 2001; Love & Talbot, 1999; Magolda, 2013; Parks, 2011; Rockenbach & Mayhew, 2013).

Grit has also become a widespread topic for discussion about success in achieving goals in a variety of areas (e.g., Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014; Hochanadel & Finamore, 2015; Perkins-Gough, 2013; Smith, 2014; Zhivotovskaya, 2009) partly because of the popular TED talk series where Duckworth (2013) first introduced the concept to the general population. The mention of spirituality and grit in non-directed comments strengthens the conclusions of this study by providing additional perspectives beyond the elements of a structured survey, bringing to mind Richardson's (2000) and Denzin's (2012) discussions of the ways multiple perspectives help the researcher to gain a more in-depth understanding of the topic

being studied. Moreover, the findings from these analyses set the stage for applying the theory to the goal of persistence to graduation using the model describe in Figure 7.

Theory Application and Implications

The significant findings of spirituality and grit correlating with persistence to graduation in the second hypothesis gives credence to Braxton et al.'s (2014) proposal that psychosocial engagement influences persistence, and Bean and Eaton's (2000) model of "psychologically motivated" (p. 49) persistence behaviors. Bean and Eaton developed their model upon the foundation of several psychological theories, including attitude-behavior, coping behavior, self-efficacy, and attribution (or locus of control). The SPIRIT theory and model developed out of this study have several points of relevance within the Bean and Eaton model. These are illustrated in Figure 8 and discussed next.

Application

At the entry level point Bean and Eaton claimed that specific pre-entry attributes, including personality, initial self-efficacy, normative beliefs, coping strategies, initial attributions (or the level of control people feel they have), and motivation create a foundation for future success. Individuals have developed these attributes through life experiences. Researchers have linked each of these attributes to aspects of either or both spirituality and grit. The state of *equanimity* described by Astin et al. (2011b) may be an aspect of an individual's personality. Self-efficacy has been tied to both spirituality and grit. Normative beliefs are generally equated with spirituality, but they may also be beliefs about one's ability to succeed, in which case they may also relate to grit. Coping strategies have been tied to both constructs, particularly in social work research, as discussed previously. Grit has been associated with resilience (Chang, 2014; Timmerman, 2014), which is also tied to coping strategies. Where individuals assign control

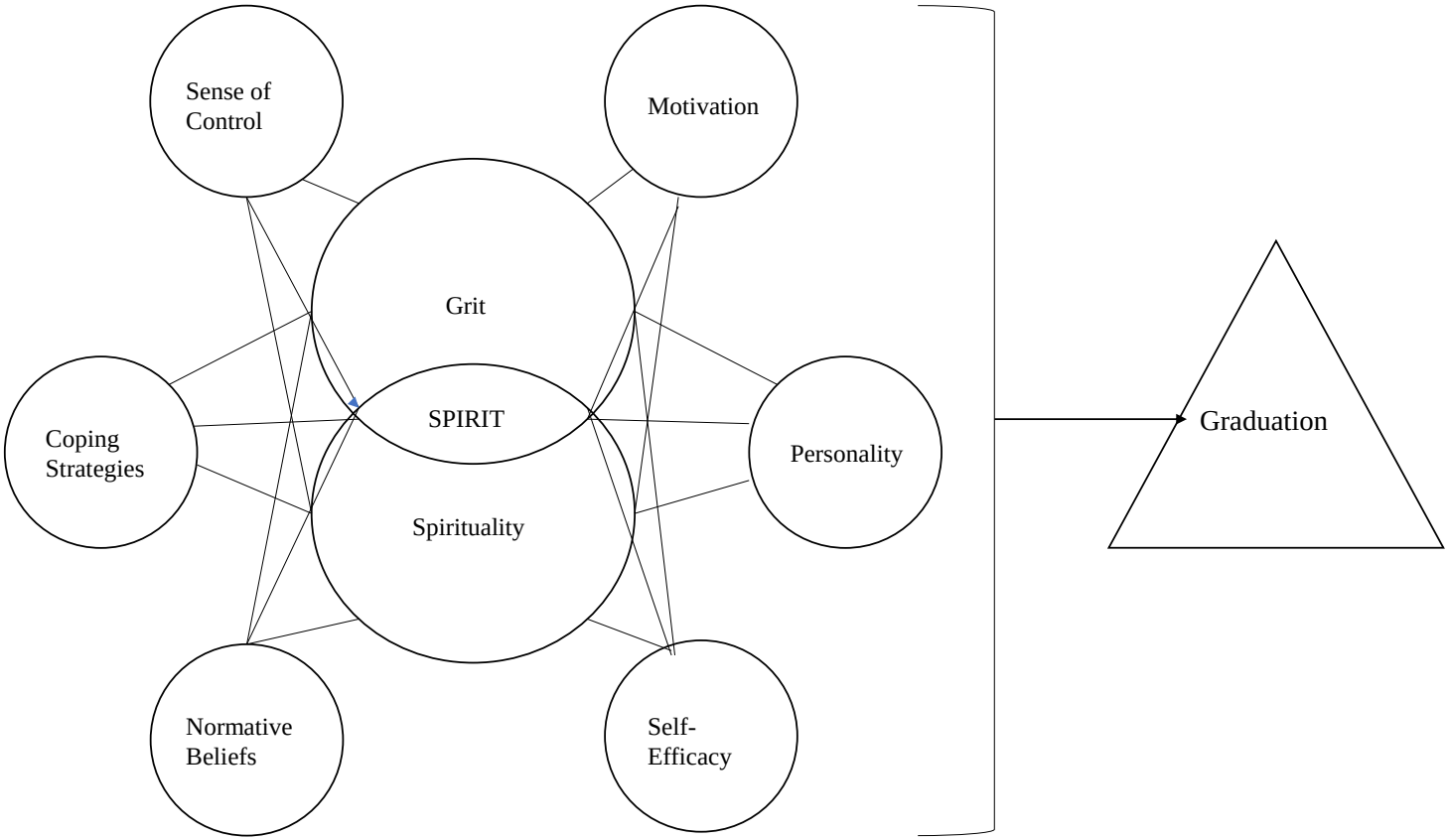


Figure 8. SPIRIT relationship with attributes from the Bean and Eaton (2000) Psychological Model of Student Retention.

over their ability to achieve has been associated with both spirituality and grit. Grit has been identified as a precursor to motivation, but Astin et al. also linked spirituality to motivation in their description of those who engage in *spiritual questing*.

Later in the model, as the institutional environment influences the student, the coping processes, feelings of self-efficacy, and sense of control continue to drive the student towards a decision to persist. The level of integration into academic and social environments will influence the number of obstacles the student senses; thereby feeding into the spirituality-grit cycle, and driving the determination of fit with and commitment to the institution. These all come together into what Bean and Eaton described as an intent to persist. The intention, in turn, translates into the action of persistence. At any point, the intent to persist may be impacted by obstacles the student identifies along the journey to graduation, causing more iterations through the SPIRIT model. Adding the relationship between SPIRIT and the attributes Bean and Eaton claim to influence the decision to persist to graduation from Figure 8 to the Bean and Eaton model illustrates the points where SPIRIT plays a role in this process and is found in Figure 9.

Thus, the SPIRIT theory adds depth and detail to the ways in which these attributes—considered by Bean and Eaton to be foundational to persistence—interact to create conditions favorable for success in persisting to the goal of graduation. This application of the SPIRIT theory is specific to the academic environment and goal of persistence to graduation, but may have merit to those studying other aspects of goal pursuit and achievement outside of academé.

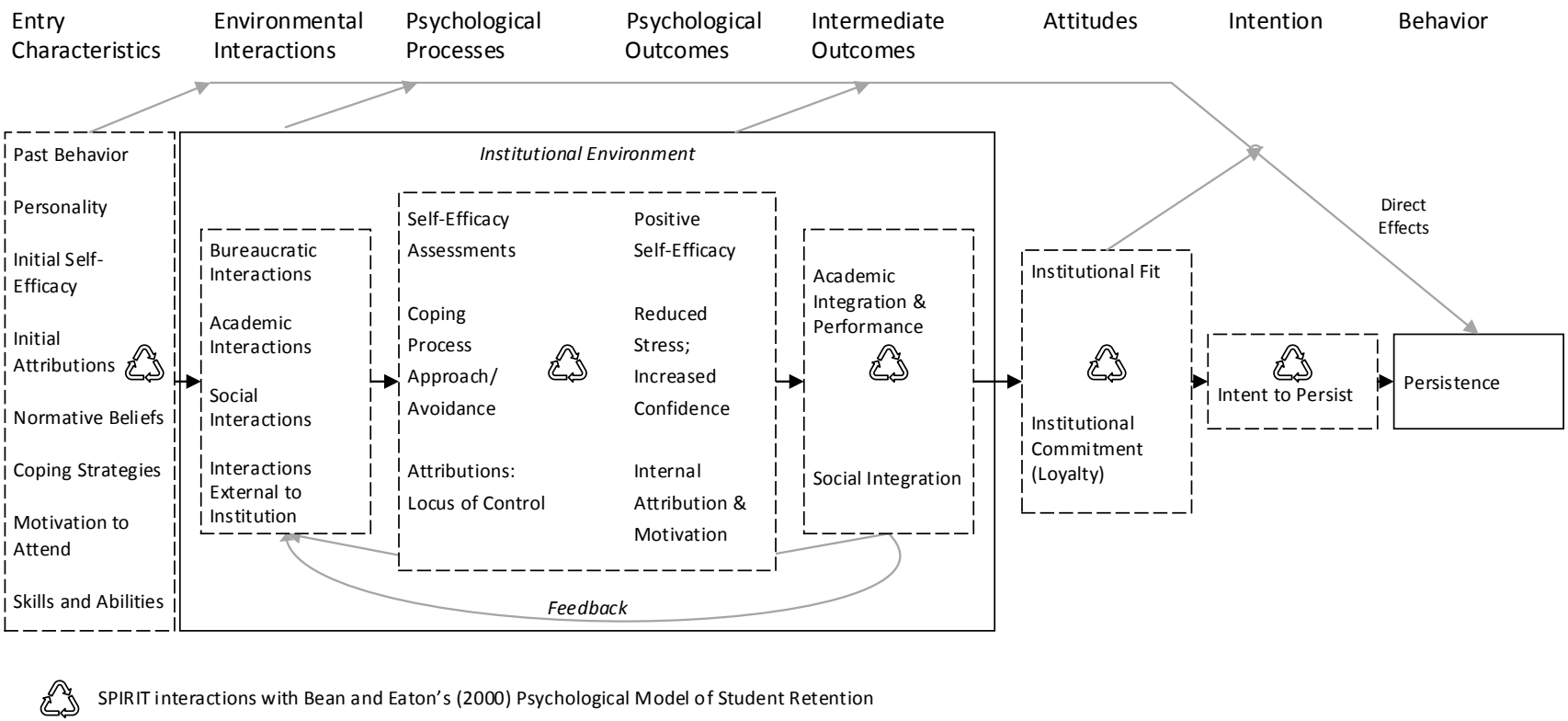


Figure 9. Points of intersection of SPIRIT with the Bean and Eaton (2000) Psychological Model of Student Retention.

Implications

The implications of this theory are many. Starting in the classroom, are there opportunities for faculty to engage students in learning outcomes that foster the exploration of meaning beyond oneself? Palmer (1998) encouraged faculty to provide activities where students may explore the presence of paradox in life as a way to learn at deeper levels. He suggested that exploring paradox introduces the experience of suffering—in controlled circumstances—in order to find meaning, which, in turn enables growth. Both spirituality and grit have been associated with the presence of suffering as a contributing factor to developing stronger spirituality or grit characteristics. This harkens back to Frankl's (1959/2006) contention that as individuals find meaning within their experience of suffering, they gain the ability to survive in even the worst of circumstances. Finding meaning is often associated with spirituality, and surviving despite one's circumstances has been construed as resilience, or grit.

Building these opportunities into the curriculum has been proposed by multiple scholars. Mayes (2003) claimed that there are multiple curricular landscapes—he identified seven—through which a teacher can "honor the physical, cognitive, psychodynamic, social and spiritual purposes of education" (p. 1) and that these curriculae should be considered to be interactive, in an approach he labelled as *holistic.* He posited that the seventh landscape, described as dialectical-spiritual, is the pinnacle of developmental education, allowing students to reach their peak of self-actualization and discovery, while simultaneously providing them with opportunities to engage in and with the world in an I-Thou relationship as rendered by Martin Buber (1965).

Vokey (2012) recommended a shared curricular framework in professional education programs in order to "assist faculty and students in becoming more just, caring, and helping professionals" (p. 97). Bashant (2014) described several strategies for teachers to use to help

teach grit in the classroom, and emphasized that "it is the quality of interactions and interventions—not the strategies themselves—that matter most" (p. 17). Glanzer (2011) proposed using a worldview approach because "everyone has a worldview" (p. 20), while Strange and Rogers (2011) divided the landscape of teaching spirituality into intellectual, convictional, and experiential dimensions. Confronting difficult topics in the classroom as espoused by hooks (1994) and others (e.g., Landis, 2008; Vogelsang & McGee, 2015) could be a way to approach Palmer's (1998) suggestion to use paradox as a teaching agent. Fink (2003) framed this approach to education as 'creating significant learning experiences' (p. 1) in order to push learning into more human dimensions, where students develop personal autonomy and connections with the world around them. Overall, as faculty understand the possibilities of the SPIRIT theory and model, they can look for ways to incorporate it into the classroom as a way to foster its development as part of the learning environment. This would re-emphasize the concept of teaching the whole student as advocated by ACE (1937; 1949) up through current day scholars (e.g., Chickering & Reisser, 1999; Kuh.2013; Tierney, 2000; Tisdell, 2003).

Moving from the classroom into administration levels at the university, policies can be implemented which support faculty efforts to build a more comprehensive curriculum that includes the SPIRIT point of view. Rather than shying away from the presence of difficult topics, administrators have the opportunity to engage with faculty and students in an atmosphere of inclusion and diversity. Using Glanzer's perspective of multiple worldviews co-existing within every campus—likely as many as there are individuals on campus—administrators can re-examine policies in order to support plurality and diversity. Rendón (2006) proposed an Interactive Model of Success for Underserved Students, where

> The student is viewed as a whole human being with hopes and dreams and with multiple intelligences and ways of knowing. . . . The student has demographic characteristics such

> as race/ethnicity, SES, gender, immigrant status, language, worldview, religion/spirituality, aspirations, and so forth. . . . Student success is conceptualized in a holistic fashion with an emphasis not only on intellect, but also on social, emotional, and spiritual development. (p. 19)

The SPIRIT theory and model underscores Rendón's holistic view of students. It could be applied based upon Hankivsky and Cormeier's (2011) recommendations that intersectionality be used when making policy. Intersectionality involves including representatives from the populations to whom the policy would apply in the policy making process, considers alternatives for dealing with policy issues, along with examining potential and intended results, and evaluates the policy after implementation to determine if it is meeting its objectives. SPIRIT could be used as a framework for policy as administrators consider where students are impacted in their persistent progress to graduation.

Kuh (2013) reported that institutions who employ high-impact practices such as first-year seminars, collaborative projects, service learning, and diversity and multicultural opportunities, increase student performance and persistence. Using these types of practices in campus-wide—not limited self-volunteered—participation, and incorporating an ecumenical pluralistic approach with SPIRIT as a guideline could be of merit to universities seeking to help their students improve their persistence to graduation.

Within administration, student affairs practitioners often are the closest to the student population and could provide valuable insights into the impact these types of approaches are having on the students they work with. Clark (2001) noted that college and university mission statements often "speak of developing the whole person of the student, including the mind, body, and spirit" (p. 37), yet student affairs professionals have commented on "a lack of connection between spirituality and student development, as seen in the wellness models we use for programming" (p. 38). Grit could likely be added to a list of items that should be included in

wellness programs. Additional training for these practitioners in understanding the impact that SPIRIT has on the persistence of students they work with could assist them in their daily interactions with students.

Student advisors and counselors could also benefit from understanding the nuances of the SPIRIT theory and model, recognizing that it doesn't identify a specific typology of a student, but, instead, suggests that these attributes often may combine in unexpected ways. Sensitivity to the impact that a spiritual search or a particularly difficult life situation may have on a decision to persist or drop out from despair could lead to new ways to advise and counsel with students having these kinds of experiences. Exploring the kinds of values and meaning a student has and places on different aspects of their lives could help advisors and counselors provide stronger support structures for students who might be on the verge of leaving.

Next, and particularly in the case of public institutions, legislatures that base funding on persistence performance should examine whether governmental policies allow for the inclusion of practices outlined herein within the curriculum and programming of universities that could potentially support spiritual and grit development without creating First Amendment issues. Mayrl and Oeur (2009) pointed out that policy-making in this area is difficult, because while institutions have reported requests to change policies to accommodate increased diversity and pluralism on campuses, there is little literature on the policies that have been subsequently adopted. In addition, funding for research into the impact of SPIRIT on persistence could be one of the items legislative (and other sources of funding) considering including in budgets. Understanding the contributing factors of persistence—such as that identified within this study and described as SPIRIT—would go a long way towards accomplishing mandated persistence and performance levels.

Finally, and overall, exploring the definitions and nuances of spirituality and grit could be useful at all levels in order to understand whether these constructs differ across gender, race, cultural, or nationality demographics. In addition, exploring the environmental and institutional conditions surrounding and contributing to the developing of SPIRIT would be equally valuable, such as those described earlier in this implications section. Scholars in persistence have emphasized that it is a joint responsibility—the individual is influenced by the environment to make a persistence decision. Stating that someone has SPIRIT or not does not mean that the institution is absolved from responsibility in the persistence process. Identifying whether and how demographic and environmental conditions impact SPIRIT would be a critical next step to developing the theory and model into practical application in any situation, academic or other.

Limitations

Limitations inherent to this study include the nature of self-reported data, incomplete survey data for some of the population, and the nature of secondary data analysis. Self-reported data is often subject to the problem of individual interpretation of the questions being asked (e.g., is the way student A defines *being dependable* the same way student B defines *being dependable*). It is also subject to the desire to be perceived well when responding to survey items (Field, 2009). This research was limited to the availability of data already gathered on the students at Ball State University and which were not focused specifically on the research question. Knight (personal communication, June 30, 2017) has suggested that these kinds of data sets are like cheesecloth—full of holes—because of the diverse reasons for the original data collection. This is typical of secondary data analysis approaches, particularly when using large data sets constructed from a number of other smaller data sets, and was addressed in Chapter 3.

In addition, as the *Mapworks* and NSSE survey owners reviewed their own research findings from past surveys and made adjustments to their approaches, some questions were changed from year to year over the course of the period from freshmen entry to graduation, making it difficult to analyze specific items across the entire data set. For this reason, the constructs of spirituality and grit were identified and analyzed using groups of variables that were considered to generally relate to those constructs, but may not have specifically been called "spirituality" or "grit." To offset this limitation, expert reviewers from *Mapworks* and NSSE were asked to weigh in on the final set of variables, and PCA was conducted to confirm that the groups of variables were consistent, as described in Chapter 3.

The definitions of the constructs themselves were a limiting factor. Spirituality is a term that has been used to describe a broad set of traits of conditions, ranging from regular attendance at church—often referred to as religiosity—to a non-specific sense about meaning-of-life that an individual may define as a state of spirituality. After reviewing multiple sources, Saggio (2011) observed that "the term has no agreed-upon phenomenology" (p. 200). Further, grit is a relative newcomer to the psychological spectrum, and researchers are still working on the nuances of how it should be defined to capture its impact (Credé et al., 2016; Ivcevic & Brackett, 2014; Von Culin et al., 2014). While a combination of variables that are generally agreed to represent aspects of spirituality and grit were used in this study, this limits more specific conclusions about how individual components of these constructs might be interacting with each other, and with persistence to graduation.

Another limitation is the application of the findings of this study to other institutions of higher education. Ball State University is a public university located in east-central Indiana. Its student population draws primarily from the state of Indiana and adjacent states (BSU, 2016b).

This area is often associated with high levels of religious and/or spiritual observance. The Pew (2017) Research Center's Religious Landscape Study found that in the Midwest region over 84 percent of the adult population said they believed in God, and 78 percent felt that religion was somewhat or very important in their lives, which possibly influenced the level of spirituality expressed by students. Many residents have struggled with unemployment due to multiple periods of recession that heavily impacted the Midwest region in the last couple of decades (Hoppe, 2016; Pete, 2016), which may have influenced the amount of grit expressed by students. Both of these conditions may well have impacted the findings of this study in ways that might not be applicable to other institutions in other regions. However, the study methodology could be used to determine whether the findings from this study have relevance to other institutions and other regions. This leads to the recommendations for future research based upon the findings of this study.

Recommendations for Future Research

The first recommendation for future research would be to replicate this study at other institutions to assess whether the findings from this study have application elsewhere. This would help to confirm the SPIRIT theory described herein, and fine tune the traits used to describe the constructs of spirituality and grit. In addition, it would be useful to conduct surveys specific to the interaction and impact of grit and spirituality on persistence to graduation using the scales that have been developed by HERI and other researchers into spirituality and grit (e.g., Astin et al, 2011a; Duckworth et al., 2007; Moberg, 2002; Von Culin et al., 2014).

Next, it is recommended that researchers work with the survey owners of Mapworks and NSSE (or other similar national higher education survey providers) to develop modules that would allow for an expanded exploration of the findings of this study over more than a single

institution. These modules would be static for a designated period to allow for the collection of more than one cohort of data without changes to the survey questions. A collaborative effort over multiple types of universities (i.e., public and private four-year institutions from several regional locations)—similar to the type of study HERI conducted on the sole construct of spirituality—would lend substantial weight to the findings of this study, and help to clarify many of the nuances of the individual constructs. A study (or studies) of this nature would add more specificity to the SPIRIT theory. It would address questions of whether there are specific aspects of spirituality that correlate more highly with specific aspects of grit. It would also address some of the concerns raised by some experts that there are different types of grit, just as scholars have already noted about spirituality. It might also work towards developing a typology around the concept of what attributes describe a person with SPIRIT. Understanding these nuances would give universities valuable information about the psychological characteristics that could be driving their students towards, or pulling their students away from, the persistence to graduation objective.

Next, as universities gradually move towards big data collections of the nature that were used in this study, data managers would be well-advised to explore the methodologies that are currently being developed to address the issues of missing data that frequently occur when compiling from multiple sources (Fan & Chow, 2017a, 2017b; Little & Rubin, 2002; Rudick, Henkins, Fiorini, & Deng, 2017). This would be of use to alleviate the type of issues that occurred in this study where analyses could not be conducted. While addressing the missing data values in this data set went beyond the scope of this study, university researchers may find that working with their data managers to conduct missing data analyses would render their data collections less cheesecloth-y and go a long way towards using existing data more effectively to

understand individual institutional persistence and retention conditions. The findings from this study also suggest there may be other points of data related to questions of spirituality and grit that universities should gather as they go forward in their data collection processes in order to better understand the persistence attributes of their students beyond basic academics.

Additionally, many researchers agree that qualitative studies provide them with opportunities to explore nuances of certain constructs that are often difficult to assess in a quantitative fashion (e.g., Chang & Boyd, 2011; Creswell, 2013; Saggio, 2011; Savin-Baden & Howell Major, 2013; Strange, 2013). While this study used data that had been collected over a period of years about the students who had attended Ball State University, a challenge inherent to this approach was the inability to access individual stories from students who had persisted to graduation, that is, alumni narratives. These narratives would add valuable perspectives to the findings of this study. Therefore, future research with participants who had graduated and were willing to share their stories would provide accounts that could allow for detailed analyses of the intersections of spirituality, grit, and persistence to the graduation goal. This approach has been recommended by other scholars. In a review of multiple quantitative studies that developed out of the original HERI spirituality research, Strange commented they "produced a mechanistic understanding of the topic. . . . To complement this thread of research, more integrated and holistic approaches [personal narratives and stories] are warranted that connect the disparate insights on the topic" (p. 207). The same could be said of future research into the persistence stories of alumni as they provide insight into spirituality and grit.

Finally, moving beyond the context of higher education, it would be useful to test the SPIRIT theory in other areas, such as social work and behavioral studies, to examine which specific characteristics of grit and spirituality overlap and intersect, and how well the intersection

of these constructs correlate with achieving other types of goals. Does this theory hold up in areas beyond academe? These are the types of studies that would lend weight to the theory and model development.

Conclusion

This study began as a question related to this researcher's personal story of persistence: *would the intersection and interaction of spirituality and grit that I experienced in my ability to persist to graduation be replicated elsewhere in the lives of other undergraduate students?* The *hunch* that perhaps the constructs of spirituality and grit might be entwined and interactive drove the decision to conduct this study from a pragmatic perspective, using a grounded-theory approach. Access to a large database constructed by the office where I worked led to the decision to focus on a quantitative methodology. The desire to approach this study from a persistence rather than a retention perspective necessitated using self-report survey data and open-ended commentary from students who had graduated; hence the addition of senior survey data to the original dataset. This decision created a QUAN-*qual* methodological approach (Morse & Niehaus, 2009), using multiple types of data (demographic, academic, and survey) and approaches to analysis (descriptive, correlational, logistical and linear regression, and narrative analyses). The use of multiple types of data, and, most especially, survey data from different perspectives, contributed to a multi-faceted look (Denzin, 2012; Richardson, 2000) at the intersection of spirituality and grit which strengthened the findings from this study.

Persistence is important to institutions of higher education. Keeping students that have already made the commitment to attend a university is substantially less expensive for that institution than finding new students; Delen (2010) stated that marketing research has shown it can cost up to 10 times as much to find new customers compared to keeping existing ones. State

and federal funding is increasingly based on institutional graduation rates, or *performance funding* (NCSL, 2015). Understanding the factors that are involved in persistence has evolved over the years, from traditional academic approaches to more nuanced views (e.g., Bean & Eaton, 2000; Braxton, 2000; DeAngelo, Franke, Hurtado, Pryor, & Tran, 2011; Habley, Bloom, & Robbins, 2012) as researchers acknowledge the impact that psychological and environmental factors play in the decision making, persistence to, and goal achieving processes.

An advantage of this study was that it allowed for a longitudinal look at multiple years of cohorts of students to determine if a pattern of relationship between spirituality, grit, and persistence to graduation manifested itself over several years. The findings from the analyses of these cohorts indicated that this pattern exists. This conclusion contributed to the development of the SPIRIT theory that the intersection and interaction of spirituality and grit drives individuals towards goal progress—in this case persistence to graduation—and a model of the theory. The consistency of this pattern supports the importance of conducting further research into the intersection of spirituality and grit and their impact on success in achieving goals, particularly the goal of persistence to graduation. It also tells me that this researcher's story is not unique; there are perhaps many others for whom these findings echo their experiences. As those in higher education seek to help students persist to graduation, this research into the contribution of spirituality and grit to the decision to persist to graduation, and the subsequent development of the SPIRIT theory, provides important insights into the inner workings of students' movement towards persistence and achieving the goal of graduation from college.

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APPENDIX A:TABLES A1-A9

SURVEY ITEMS BY COHORT YEAR

Table A1

Cohort 2004 Survey Items by Construct and Survey Year and Field Name

Question Text and Construct	Survey	Year	Field Name
Spirituality			
Religious activities	Mapworks	FTFY	S2_24REL
Discuss with students whose beliefs or values are different from yours	Mapworks	FTFY	S2_26BEL
Develop own values and ethics	Mapworks	FTFY	S4_24VAL
Gain better understanding of yourself	Mapworks	FTFY	S4_30UND
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	NSSE	2008	6c
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics	NSSE	2008	11n
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality	NSSE	2008	11p
Grit			
Managing my time well	Mapworks	FTFY	S2_60MNG
Rate: academic self-confidence	Mapworks	FTFY	S3_09ACA
Rate: self-motivation	Mapworks	FTFY	S3_10SLF
Rate: ability to set goals	Mapworks	FTFY	S3_11GOL
Rate: manage time	Mapworks	FTFY	S3_13TME
Rate: get started on tasks	Mapworks	FTFY	S3_14STR
Rate: stick with tasks	Mapworks	FTFY	S3_15STK
Rate: complete tasks on time	Mapworks	FTFY	S3:16CPL
Rate: ability to manage stress	Mapworks	FTFY	S3_25STE
Develop independence	Mapworks	FTFY	S4_19DEV
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	NSSE	2008	1r

Note: FTFY = First Time Freshman Year

Table A2

Cohort 2005 Survey Items by Construct and Survey Year and Field Name

Question Text	Survey	Year	Field Name
Spirituality			
Religious activities	Mapworks	FTFY	S2_24REL
Discuss with students whose beliefs or values are different from yours	Mapworks	FTFY	S2_26BEL
Develop own values and ethics	Mapworks	FTFY	S4_24VAL
Gain better understanding of yourself	Mapworks	FTFY	S4_30UND
Grit			
Managing my time well	Mapworks	FTFY	S2_60MNG
Rate: academic self-confidence	Mapworks	FTFY	S3_09ACA
Rate: self-motivation	Mapworks	FTFY	S3_10SLF
Rate: ability to set goals	Mapworks	FTFY	S3_11GOL
Rate: manage time	Mapworks	FTFY	S3_13TME
Rate: get started on tasks	Mapworks	FTFY	S3_14STR
Rate: stick with tasks	Mapworks	FTFY	S3_15STK
Rate: complete tasks on time	Mapworks	FTFY	S3:16CPL
Rate: ability to manage stress	Mapworks	FTFY	S3_25STE
Develop independence	Mapworks	FTFY	S4_19DEV

Note: FTFY = First Time Freshman Year

Table A3

Cohort 2006 Survey Items by Construct and Survey Year and Field Name

Question Text	Survey	Year	Field Name
Spirituality			
Religious activities	Mapworks	FTFY	Q114
Grit			
Is self-disciplined	Mapworks	FTFY	Q147
Is a self-starter	Mapworks	FTFY	Q148
Is reliable	Mapworks	FTFY	Q149
Is dependable	Mapworks	FTFY	Q150
Does work before play	Mapworks	FTFY	Q151
Plans out time	Mapworks	FTFY	Q152
Sticks to time plan	Mapworks	FTFY	Q153
Ability to manage your time	Mapworks	FTFY	Q157
Mapworks Factor: Commitment	Mapworks	FTFY	F06
Mapworks Factor: Self-confidence	Mapworks	FTFY	F10
Mapworks Factor: Self-evaluation	Mapworks	FTFY	F26

Note: FTFY = First Time Freshman Year

Table A4

Cohort 2007 Survey Items by Construct and Survey Year and Field Name

Question Text	Survey	Year	Field Name
Spirituality			
Intend to be involved in religiously oriented groups or activities	Mapworks	FTFY	Q149
Grit			
Is self-disciplined	Mapworks	FTFY	Q035
Is a self-starter	Mapworks	FTFY	Q036
Is reliable	Mapworks	FTFY	Q037
Follows through with what you say you are going to do	Mapworks	FTFY	Q039
Is dependable	Mapworks	FTFY	Q040
Does your work before play	Mapworks	FTFY	Q041
Plans out your time	Mapworks	FTFY	Q042
Sticks to your time plan	Mapworks	FTFY	Q043
Do even the hardest work assigned in your classes	Mapworks	FTFY	Q045
Do well in your hardest course	Mapworks	FTFY	Q049
Persevere on class projects even when there are challenges	Mapworks	FTFY	Q050
Spends sufficient time studying to earn the grades you want	Mapworks	FTFY	Q110

Note: FTFY = First Time Freshman Year

Table A5

Cohort 2008 Survey Items by Construct and Survey Year and Field Name

Question Text	Survey	Year	Field Name
Spirituality			
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	NSSE	2012	6c
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Understanding yourself	NSSE	2012	11k
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics	NSSE	2012	11n
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality	NSSE	2012	11p

Table A5 (Cont.)

Cohort 2008 Survey Items by Construct and Survey Year and Field Name

Question Text	Survey	Year	Field Name
Grit			
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	Mapworks	FTFY	Q028
	Mapworks	FTSO	Q018
Is a self-starter	Mapworks	FTFY	Q029
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	Mapworks	FTFY	Q030
	Mapworks	FTSO	Q019
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	Mapworks	FTFY	Q031
	Mapworks	FTSO	Q020
Does work before play	Mapworks	FTFY	Q033
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	Mapworks	FTFY	Q034
	Mapworks	FTSO	Q022
Sticks to your time plan	Mapworks	FTFY	Q035
Do even the hardest work assigned in your classes	Mapworks	FTFY	Q064
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	Mapworks	FTFY	Q066
	Mapworks	FTSO	Q040
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	Mapworks	FTFY	Q067
	Mapworks	FTSO	Q041
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn the grades you want	Mapworks	FTFY	Q073
	Mapworks	FTSO	Q047
Motivated to complete your academic work	Mapworks	FTFY	Q136
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	NSSE	2012	1r

Note: FTFY = First Time Freshman Year; FTSO = First Time Sophomore

Table A6

Cohort 2009 Survey Items by Construct and Survey Year and Field Name

Question Text	Survey	Year	Field Name
Spirituality			
No survey items inquired about spirituality or values for this cohort.			
Grit			
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	Mapworks	FTFY	Q018
	Mapworks	FTSO	Q018
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you are going to do	Mapworks	FTFY	Q019
	Mapworks	FTSO	Q019
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	Mapworks	FTFY	Q020
	Mapworks	FTSO	Q020
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	Mapworks	FTFY	Q022
	Mapworks	FTSO	Q022
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	Mapworks	FTSO	Q040
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	Mapworks	FTFY	Q041
	Mapworks	FTSO	Q041
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	Mapworks	FTFY	Q047
	Mapworks	FTSO	Q047

Note: FTFY = First Time Freshman Year; FTSO = First Time Sophomore

Table A7

Cohort 2010 Survey Items by Construct and Survey Year and Field Name

Question Text	Survey	Year	Field Name
Spirituality			
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	NSSE	2015	8c
Perceived gains? Developing or clarifying a personal code of values and ethics	NSSE	2015	17g
Grit			
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	Mapworks	FTFY	Q018
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	Mapworks	FTFY	Q019
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	Mapworks	FTFY	Q020
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	Mapworks	FTFY	Q022
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	Mapworks	FTFY	Q040
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	Mapworks	FTFY	Q041
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	Mapworks	FTFY	Q047

Note: FTFY = First Time Freshman Year

Table A8

Cohort 2011 Survey Items by Construct and Survey Year and Field Name

Question Text and Construct	Survey	Year	Field Name
Spirituality			
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	NSSE	2012	6c
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Understanding yourself	NSSE	2012	11k
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics	NSSE	2012	11n
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality	NSSE	2012	11p
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	NSSE	2015	8c
Perceived gains? Developing or clarifying a personal code of values and ethics	NSSE	2015	17g

Table A8 (Cont.)

Cohort 2011 Survey Items by Construct and Survey Year and Field Name

Question Text and Construct	Survey	Year	Field Name
Grit			
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	Mapworks	FTFY	Q018
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	Mapworks	FTFY	Q019
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	Mapworks	FTFY	Q020
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	Mapworks	FTFY	Q022
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	Mapworks	FTFY	Q040
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	Mapworks	FTFY	Q041
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	Mapworks	FTFY	Q047
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	NSSE	2012	1r

Note: FTFY = First Time Freshman Year

Table A9

Cohort 2012 Survey Items by Construct and Survey Year and Field Name

Question Text	Survey	Year	Field Name
Spirituality			
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	NSSE	2015	8c
Perceived gains? Developing or clarifying a personal code of values and ethics	NSSE	2015	17g
Grit			
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	Mapworks	FTFY	Q018
	Mapworks	FTSO	Q018
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	Mapworks	FTFY	Q019
	Mapworks	FTSO	Q019
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	Mapworks	FTFY	Q020
	Mapworks	FTSO	Q020
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	Mapworks	FTFY	Q022
	Mapworks	FTSO	Q022
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	Mapworks	FTFY	Q040
	Mapworks	FTSO	Q040
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	Mapworks	FTFY	Q041
	Mapworks	FTSO	Q041
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	Mapworks	FTFY	Q047
	Mapworks	FTSO	Q047

Note: FTFY = First Time Freshman Year; FTSO = First Time Sophomore

APPENDIX B:

PERSISTENCE QUESTIONS IN SENIOR SURVEY

Which of the following resources do you believe helped you to achieve your degree at Ball State? Please select any of the following resources that were <u>instrumental to your success as a student</u>. (online survey, order of items is randomized by category and within each category)

- Support from another person
  - ☐ Residence Hall Director
  - ☐ Fraternity or Sorority
  - ☐ Employer
  - ☐ Family member
  - ☐ Professor or Instructor
  - ☐ Life coach mentor
  - ☐ Friend
  - ☐ Academic Advisor
  - ☐ Spiritual mentor
  - ☐ Roommate
- Financial Aid
  - ☐ Student Employment
  - ☐ Employer
  - ☐ Scholarship
  - ☐ Grant
  - ☐ Loan
- Environment
  - ☐ Housing
  - ☐ Recreational opportunities
  - ☐ Faculty
  - ☐ Other students
  - ☐ Administration
  - ☐ Cultural activities
  - ☐ Diversity
  - ☐ Accessibility provisions on campus

- Co-Curricular activities
  - ☐ Campus Publications
  - ☐ Athletics
  - ☐ Fraternity/Sorority
  - ☐ Volunteer work
  - ☐ Student Government
  - ☐ Student Organization
- Personal development
  - ☐ Sense of life purpose
  - ☐ Self-authorship
  - ☐ Social interactions
  - ☐ Grit
  - ☐ Spiritual or religious growth
  - ☐ Health
  - ☐ Identifying values
  - ☐ Identity development
- Academic activities
  - ☐ Living-learning community
  - ☐ Study abroad
  - ☐ Service learning
  - ☐ Immersive learning
  - ☐ Research project
  - ☐ Coursework and academic skill improvement
  - ☐ Senior-level capstone experience
  - ☐ Internship, practicum, or field experience
- ☐ None of the above

Were there important resources to your success that we didn't list? If so, please write them in below.

APPENDIX C: TABLES C1-C17

PRINCIPAL COMPONENT ANALYSES OF VARIABLES

Table C1

Anti-Image Matrix Score, Rotated Factor Loadings (Pattern), and Factor Eigenvalues for Variables Included in Cohort 2004 PCA (N = 309)

Item	Anti-Image Score	Rotated Factor Loadings (Pattern)				
		Grit 1	Grit 2	Spirit 1	Spirit 2	Mixed
Rate – Manage time	.875	.857				
Rate – Get started on tasks	.884	.823				
Rate – Complete tasks on time	.912	.770				
Rate – Stick with tasks	.905	.769				
Rate – Self-motivation	.886	.742				
Rate – Ability to set goals	.913	.715				
Managing my time well	.919	.713				
Rate – Academic self-confidence	.827	.525				
Gain better understanding of self	.588		-.827			
Develop independence	.670		-.784			
Develop own values and ethics	.636		-.652			
Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	.562			.863		
Religious activities	.572			-.832		
Institutional contribution: Developing a personal code of values and ethics	.530				.850	
Institutional contribution: Developing a deepened sense of spirituality	.544				.765	
Worked harder than you thought you could to meet an instructor's standards or expectations	.685				.610	
Discuss with students whose beliefs or values are different	.498					.780
Rate – Ability to manage stress	.849					.461
Eigenvalues	NA	4.917	2.063	1.640	1.503	1.143
% of Variance	NA	27.315	11.461	9.113	8.347	6.348

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization. Rotation converged in 7 iterations.
Values for factors suppressed below .400.
Mapworks items for the 2004 cohort were reverse coded when compared to NSSE items, so the direction may be in error.

Table C2

Rotated Factor Loadings (Structure) for Variables Included in Cohort 2004 PCA (N = 309)

	Rotated Factor Loadings (Structure)				
Item	Grit 1	Grit 2	Spirit 1	Spirit 2	Mixed
Rate – Manage time	.849				
Rate – Get started on tasks	.821				
Rate – Stick with tasks	.788				
Rate – Complete tasks on time	.763				
Rate – Self-motivation	.761				
Rate – Ability to set goals	.729				
Managing my time well	.694				
Rate – Academic self-confidence	.578				.449
Gain better understanding of self		-.816			
Develop own values and ethics		-.788			
Develop independence		-.667			
Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)			.874		
Religious activities			-.831		
Institutional contribution: Developing a personal code of values and ethics				.827	
Institutional contribution: Developing a deepened sense of spirituality				.773	
Worked harder than you thought you could to meet an instructor's standards or expectations				.647	
Discuss with students whose beliefs or values are different					.770
Rate – Ability to manage stress	.458				.516

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization.
Values for factors suppressed below .400
Mapworks items for the 2004 cohort were reverse coded when compared to NSSE items, so the direction may be in error.

Table C3

Anti-Image Matrix Score, Rotated Factor Loadings (Pattern), and Factor Eigenvalues for Variables Included in Cohort 2005 PCA (N = 2,448)

Item	Anti-Image Score	Rotated Factor Loadings (Pattern)		
		Grit 1	Spirit 1	Spirit 2
Rate – Manage time	.896	.852		
Rate – Get started on tasks	.891	.827		
Rate – Stick with tasks	.904	.820		
Rate – Complete tasks on time	.927	.755		
Rate – Self-motivation	.904	.755		
Rate – Ability to set goals	.936	.721		
Rate – Academic self-confidence	.889	.657		
Managing my time well	.912	.596		
Rate – Ability to manage stress	.928	.586		
Gain better understanding of self	.698		.853	
Develop own values and ethics	.727		.810	
Develop independence	.758		.797	
Discuss with students whose beliefs or values are different	.658			.811
Religious activities	.712			.806
Eigenvalues	NA	5.028	2.037	1.203
% of Variance	NA	35.912	14.550	8.590

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization. Rotation converged in 3 iterations.
Values for factors suppressed below .400.

Table C4

Rotated Factor Loadings (Structure) for Variables Included in Cohort 2005 PCA (N = 2,448)

	Rotated Factor Loadings (Structure)		
Item	Grit 1	Spirit 1	Spirit 2
Rate – Manage time	.850		
Rate – Get started on tasks	.825		
Rate – Stick with tasks	.820		
Rate – Self-motivation	.765		
Rate – Complete tasks on time	.763		
Rate – Ability to set goals	.738		
Rate – Academic self-confidence	.662		
Managing my time well	.593		
Rate – Ability to manage stress	.566		
Gain better understanding of self		.851	
Develop own values and ethics		.820	
Develop independence		.791	
Discuss with students whose beliefs or values are different			.810
Religious activities			.807

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization.
Values for factors suppressed below .400

Table C5

Anti-Image Matrix Score, Rotated Factor Loadings (Pattern), and Factor Eigenvalues for Variables Included in Cohort 2006 PCA (N = 2,777)

Item	Anti-Image Score	Rotated Factor Loadings (Pattern)		
		Grit 1	Grit 2	Spirit 1
Sticks to time plan	.860	.908		
Plans out time	.857	.896		
Does work before play	.953	.833		
Is a self-starter	.864	.673		
Ability to manage your time	.956	.658		
Is self-disciplined	.859	.645		
MAP factor: Self evaluation	.958	.514		
Is dependable	.762		.704	
Is reliable	.766	.421	.691	
Map factor: Commitment	.938		.688	
Religious activities	.886			.700
Map factor: Self commitment	.894			.693
Eigenvalues	NA	5.369	1.231	1.038
% of Variance	NA	44.741	10.261	8.651

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization. Rotation converged in 7 iterations.
Values for factors suppressed below .400.

Table C6

Rotated Factor Loadings (Structure) for Variables Included in Cohort 2006 PCA (N = 2,777)

	Rotated Factor Loadings (Structure)		
Item	Grit 1	Grit 2	Spirit 1
Sticks to time plan	.849		
Plans out time	.847		
Does work before play	.815		
Is a self-starter	.770	.442	
Is self-disciplined	.747	.490	
Ability to manage your time	.719		
MAP factor: Self evaluation	.611		
Is dependable	.593	.814	
Is reliable	.613	.808	
Map factor: Commitment		.658	
Map factor: Self commitment			.726
Religious activities			.696

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization.
Values for factors suppressed below .400

Table C7

Anti-Image Matrix Score, Factor Loadings (Component), and Factor Eigenvalues for Variables Included in Cohort 2007 PCA (N = 2,846)

Item	Anti-Image Score	Component Mixed
Does work before play	.909	.975
Is self-disciplined	.891	.972
Is dependable	.950	.972
Plans out time	.947	.967
Follows through with what you say you are going to do	.886	.965
Is a self-starter	.985	.962
Is reliable	.884	.953
Do even the hardest work assigned in your classes	.958	.928
Do well in your hardest course	.919	.927
Persevere on class project even when there are challenges	.940	.904
Spend sufficient time studying to earn the grades you want	.963	.761
Religious – religiously oriented groups or activities	.951	.615
Eigenvalues	NA	10.036
% of Variance	NA	83.629

Notes: Extraction Method: Principal Component Analysis (PCA).
Only one component was extracted. Component plots cannot be produced.
Values for factors suppressed below .400.

Table C8

Anti-Image Matrix Score, Rotated Factor Loadings (Pattern), and Factor Eigenvalues for Variables Included in Cohort 2008 PCA (N = 360)

Item	Anti-Image Score	Rotated Factor Loadings (Pattern)					
		Grit 1	Spirit 1	Grit 2	Grit 3	Grit 4	Spirit 2
Spends sufficient time studying to earn good grades (FTFY)	.894	.820					
Does your work before play	.936	.708					
Motivated to complete your academic work (FTFY)	.907	.691					
Sticks to your time plan (FTFY)	.872	.645					
Plans out your time (FTFY)	.879	.614					
Spends sufficient time studying to earn good grades (FTSO)	.893	.528			-.443		
Institutional contribution: Developing a personal code of values and ethics	.686		.818				
Institutional contribution: Understanding yourself	.710		.812				
Worked harder than you thought you could to meet an instructor's standards or expectations	.826		.620				
Do well in your hardest course (FTFY)	.834			.870			
Do even the hardest work assigned in your courses (FTFY)	.832			.829			
Persevere on class projects even when there are challenges (FTFY)	.860			.797			
Persevere on class projects even when there are challenges (FTSO)	.786			.566	-.532		
Do well in your hardest course (FTSO)	.773			.565	-.501		

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization. Rotation converged in 15 iterations.
Values for factors suppressed below .400.
FTFY = First Time Freshman Year, FTSO = First Time Sophomore.

Table C8 (Cont.)

Anti-Image Matrix Score, Rotated Factor Loadings (Pattern), and Factor Eigenvalues for Variables Included in Cohort 2008 PCA (N = 360)

Item	Anti-Image Score	Rotated Factor Loadings (Pattern)					
		Grit 1	Spirit 1	Grit 2	Grit 3	Grit 4	Spirit 2
Follows through with what you say you're going to do (FTSO)	.861				-.787		
Is dependable (FTSO)	.798				-.717		
Is self-disciplined (FTSO)	.875				-.646		
Plans out your time (FTSO)	.861				-.606		
Is dependable (FTFY)	.843					.748	
Follows through with what you say you're going to do (FTFY)	.897					.667	
Is self-disciplined (FTFY)	.842					.633	
Is a self-starter (FTFY)	.881					.607	
Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	.434						.922
Institutional contribution: Developing a deepened sense of spirituality	.663	.479					.622
Eigenvalues	NA	7.037	2.356	2.183	1.769	1.319	1.219
% of Variance	NA	29.320	9.816	9.096	7.372	5.494	5.081

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization. Rotation converged in 15 iterations.
Values for factors suppressed below .400.
FTFY = First Time Freshman Year, FTSO = First Time Sophomore.

Table C9

Rotated Factor Loadings (Structure) for Variables Included in Cohort 2008 PCA (N = 360)

	Rotated Factor Loadings (Structure)					
Item	Grit 1	Spirit 1	Grit 2	Grit 3	Grit 4	Spirit 2
Does your work before play	.786				.488	
Spends sufficient time studying to earn good grades (FTFY)	.785					
Sticks to your time plan (FTFY)	.776				.534	
Plans out your time (FTFY)	.747					
Motivated to complete your academic work (FTFY)	.739					
Spends sufficient time studying to earn good grades (FTSO)	.592			-.562		
Institutional contribution: Developing a personal code of values and ethics		.830				
Institutional contribution: Understanding yourself		.802				
Worked harder than you thought you could to meet an instructor's standards or expectations		.616				
Do well in your hardest course (FTFY)			.876			
Do even the hardest work assigned in your courses (FTFY)			.841			
Persevere on class projects even when there are challenges (FTFY)			.823			
Persevere on class projects even when there are challenges (FTSO)			.632	-.593		
Do well in your hardest course (FTSO)			.627	-.566		
Follows through with what you say you're going to do (FTSO)				-.795		
Is self-disciplined (FTSO)	.457			-.730		
Is dependable (FTSO)				-.730		
Plans out your time (FTSO)	.465			-.680		
Is dependable (FTFY)					.758	
Is self-disciplined (FTFY)	.452				.739	

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization.
Values for factors suppressed below .400
FTFY = First Time Freshman Year, FTSO = First Time Sophomore.

Table C9 (Cont.)

Rotated Factor Loadings (Structure) for Variables Included in Cohort 2008 PCA (N = 360)

	Rotated Factor Loadings (Structure)					
Item	Grit 1	Spirit 1	Grit 2	Grit 3	Grit 4	Spirit 2
Follows through with what you say you're going to do (FTFY)					.730	
Is a self-starter (FTFY)	.457				.725	
Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)						.888
Institutional contribution: Developing a deepened sense of spirituality		.555				.670

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization.
Values for factors suppressed below .400
FTFY = First Time Freshman Year, FTSO = First Time Sophomore.

Table C10

Anti-Image Matrix Score, Rotated Factor Loadings (Pattern), and Factor Eigenvalues for Variables Included in Cohort 2009 PCA (N = 1,157)

Item	Anti-Image Score	Rotated Factor Loadings (Pattern)	
		Grit 1	Grit 2
Follows through with what you say you are going to do (FTSO)	.824	.960	
Plans out your time (FTSO)	.840	.949	
Persevere on class projects even when there are challenges (FTSO)	.847	.910	
Is dependable (FTSO)	.975	.892	
Is self-disciplined (FTSO)	.980	.888	
Do well in your hardest course (FTSO)	.846	.863	
Spends sufficient study time to earn good grades (FTSO)	.970	.836	
Is self-disciplined (FTFY)	.860		.779
Follows through with what you say you are going to do (FTFY)	.768		.757
Plans out your time (FTFY)	.739		.725
Is dependable (FTFY)	.787		.719
Spends sufficient study time to earn good grades (FTFY)	.810		.694
Persevere on class projects even when there are challenges (FTFY)	.850		.578
Eigenvalues	NA	5.747	2.977
% of Variance	NA	44.211	22.901

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization. Rotation converged in 3 iterations.
Values for factors suppressed below .400.
FTFY = First Time Freshman Year, FTSO = First Time Sophomore.

Table C11

Rotated Factor Loadings (Structure) for Variables Included in Cohort 2009 PCA (N = 1,171)

	Rotated Factor Loadings (Structure)	
Item	Grit 1	Grit 2
Follows through with what you say you are going to do (FTSO)	.962	
Plans out your time (FTSO)	.953	
Persevere on class projects even when there are challenges (FTSO)	.909	
Is dependable (FTSO)	.892	
Is self-disciplined (FTSO)	.888	
Do well in your hardest course (FTSO)	.861	
Spends sufficient study time to earn good grades (FTSO)	.835	
Is self-disciplined (FTFY)		.779
Follows through with what you say you are going to do (FTFY)		.758
Plans out your time (FTFY)		.727
Is dependable (FTFY)		.718
Spends sufficient study time to earn good grades (FTFY)		.694
Persevere on class projects even when there are challenges (FTFY)		.578

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization.
Values for factors suppressed below .400
FTFY = First Time Freshman Year, FTSO = First Time Sophomore.

Table C12

Anti-Image Matrix Score, Rotated Factor Loadings (Pattern), and Factor Eigenvalues for Variables Included in Cohort 2010 PCA (N = 34)

Item	Anti-Image Score	Rotated Factor Loadings (Pattern)		
		Grit 1	Grit 2	Spirit 1
Follows through with what you say you're going to do	.592	.957		
Is dependable	.604	.911		
Is self-disciplined	.717	.768		
Do well in your hardest course	.412		.752	
Developing or clarifying a personal code of values and ethics	.516		.644	
Persevere on class projects even when there are challenges	.361		-.625	
Had discussion with people with religious beliefs other than your own	.592			.803
Spends sufficient study time to earn good grades	.607			-.761
Plans out your time	.680			-.422
Eigenvalues	NA	3.128	1.571	1.158
% of Variance	NA	34.760	17.456	12.865

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization. Rotation converged in 6 iterations.
Values for factors suppressed below .400.

Table C13

Rotated Factor Loadings (Structure) for Variables Included in Cohort 2010 PCA (N = 34)

	Rotated Factor Loadings (Structure)		
Item	Grit 1	Grit 2	Spirit 1
Follows through with what you say you're going to do	.937		
Is dependable	.881		
Is self-disciplined	.834		
Do well in your hardest course		.733	
Developing or clarifying a personal code of values and ethics		.649	
Persevere on class projects even when there are challenges		-.621	
Spends sufficient study time to earn good grades			-.817
Had discussion with people with religious beliefs other than your own			.767
Plans out your time	.544	.438	-.546

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization.
Values for factors suppressed below .400

Table C14

Anti-Image Matrix Score, Rotated Factor Loadings (Pattern), and Factor Eigenvalues for Variables Included in Cohort 2011 PCA (N = 99)

Item	Anti-Image Score	Rotated Factor Loadings (Pattern)			
		Grit 1	Spirit 1	Mixed	Spirit 2
Follows through with what you say you're going to do	.772	.844			
Is dependable	.756	.760			
Plans out your time	.819	.759			
Is self-disciplined	.857	.734			
Spends sufficient study time to earn good grades	.845	.615			
Had discussions with people with religious beliefs other than your own	.708	-.551		.415	
Institutional contribution: Developing a personal code of values and ethics	.615		.799		
Institutional contribution: Understanding yourself	.613		.768		
Worked harder than you thought you could to meet an instructor's standards or expectations	.605		.559		
Developing or clarifying a personal code of values and ethics	.662		.484		
Persevere on class projects even when there are challenges	.587			.877	
Do well in your hardest course	.654			.829	
Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	.511				.899
Institutional contribution: Developing a deepened sense of spirituality	.572				.799
Eigenvalues	NA	3.688	2.145	1.695	1.147
% of Variance	NA	26.343	15.321	12.109	8.193

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization. Rotation converged in 7 iterations.
Values for factors suppressed below .400.

Table C15

Rotated Factor Loadings (Structure) for Variables Included in Cohort 2011 PCA (N = 99)

	Rotated Factor Loadings (Structure)			
Item	Grit 1	Spirit 1	Mixed	Spirit 2
Follows through with what you say you're going to do	.862			
Plans out your time	.776			
Is dependable	.759			
Is self-disciplined	.756			
Spends sufficient study time to earn good grades	.666		.439	
Had discussions with people with religious beliefs other than your own	-.474			
Institutional contribution: Developing a personal code of values and ethics		.799		
Institutional contribution: Understanding yourself		.778		
Worked harder than you thought you could to meet an instructor's standards or expectations		.539		
Developing or clarifying a personal code of values and ethics		.495		
Persevere on class projects even when there are challenges			.883	
Do well in your hardest course			.851	
Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)				.865
Institutional contribution: Developing a deepened sense of spirituality				.837

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization.
Values for factors suppressed below .400

Table C16

Anti-Image Matrix Score, Rotated Factor Loadings (Pattern), and Factor Eigenvalues for Variables Included in Cohort 2012 PCA (N = 23)

Item	Anti-Image Score	Rotated Factor Loadings (Pattern)			
		Grit 1	Grit 2	Grit 3	Spirit 1
Self-disciplined	.629	.483	-.649		
Follows through with what you say you're going to do	.574	.965			
Is dependable	.608	.884			
Plans out your time	.552		-.819		
Do well in your hardest course	.486			.873	
Persevere	.482			.876	
Spends sufficient time studying to earn good grades	.584		-.904		
Had discussion with people with religious beliefs other than your own	.467				.671
Perceived gains: Developing or clarifying a personal code of values and ethics	.289				.930
Eigenvalues	NA	3.027	1.807	1.324	1.203
% of Variance	NA	33.634	20.080	14.713	13.366

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization. Rotation converged in 7 iterations.
Values for factors suppressed below .400.

Table C17

Rotated Factor Loadings (Structure) for Variables Included in Cohort 2012 PCA (N = 23)

	Rotated Factor Loadings (Structure)			
Item	Grit 1	Grit 2	Grit 3	Spirit 1
Self-disciplined	.625	-.739		
Follows through with what you say you're going to do	.933			
Is dependable	.937			
Plans out your time		-.839		
Do well in your hardest course			.877	
Persevere			.879	
Spends sufficient time studying to earn good grades		-.880		
Had discussion with people with religious beliefs other than your own				.728
Perceived gains: Developing or clarifying a personal code of values and ethics				.901

Notes: Extraction Method: Principal Component Analysis (PCA).
Rotation Method: Oblimin with Kaiser normalization.
Values for factors suppressed below .400

APPENDIX D: TABLES D1-D81

DESCRIPTIVE, CORRELATIONAL, PREDICTIVE, AND NARRATIVE ANALYSES

Table D1

N and Percentages of Students by Gender and Cohort Entry Year

		Male		Female	
Entry Year	*N*	*N*	%	*N*	%
2004	*3,341*	*1,456*	43.6	*1,885*	56.4
2005	*3,267*	*1,419*	43.4	*1,848*	56.6
2006	*3,555*	*1,572*	44.2	*1,983*	55.8
2007	*3,479*	*1,490*	42.8	*1,989*	57.2
2008	*3,756*	*1,588*	42.3	*2,168*	57.7
2009	*4,150*	*1,906*	45.9	*2,244*	54.1
2010	*3,856*	*1,728*	44.8	*2,128*	55.2
2011	*3,836*	*1,514*	39.5	*2,322*	60.5
2012	*3,494*	*1,438*	41.2	*2,056*	58.8
Total	*32,734*	*14,111*	43.1	*18,623*	56.9

Table D2

N and Percentages of Students by Race and Cohort Entry Year

				Students of					
Entry		White		Color		International		Unknown	
Year	*N*	*N*	%	*N*	%	*N*	%	*N*	%
2004	*3,341*	*2,991*	89.5	*232*	6.9	*4*	0.1	*111*	3.3
2005	*3,267*	*2,889*	88.4	*243*	7.4	*6*	0.2	*126*	3.9
2006	*3,555*	*3,175*	89.3	*266*	7.5	*12*	0.3	*102*	2.9
2007	*3,479*	*3,049*	87.6	*289*	8.3	*12*	0.3	*129*	3.7
2008	*3,756*	*3,336*	88.8	*298*	7.9	*12*	0.3	*110*	2.9
2009	*4,150*	*3,492*	84.1	*563*	13.6	*0*	0.0	*95*	2.3
2010	*3,856*	*3,265*	84.7	*543*	14.1	*14*	0.4	*34*	0.9
2011	*3,836*	*3,247*	84.7	*535*	14.0	*16*	0.4	*38*	1.0
2012	*3,494*	*2,944*	84.3	*499*	14.3	*21*	0.6	*30*	0.9
Total	*32,734*	*28,388*	86.7	*3,468*	10.6	*97*	0.3	*775*	2.4

Notes. Three students in cohort 2004 and 2005 years were not coded.
Race or ethnicity was coded for domestic students only, in accordance with standard practice.
International students were coded as International regardless of race or ethnicity.
Unknown includes all students who declined to respond to the question requesting their race or ethnicity.
Percentages may not total to 100% due to rounding.

Table D3

Number of Students by Time to Graduation for Each Cohort Year, with Percentages

Entry		4-Year		5-Year		6-Year		Total Grads	
Year	*N*	*N*	%	*N*	%	*N*	%	*N*	%
2004	*3,341*	*1,119*	33.5	*596*	17.8	*132*	4.0	*1,847*	55.3
2005	*3,267*	*1,053*	32.3	*582*	17.8	*139*	4.3	*1,774*	54.3
2006	*3,555*	*1,135*	31.9	*691*	19.4	*156*	4.4	*1,982*	55.8
2007	*3,479*	*1,208*	34.7	*711*	20.4	*145*	4.2	*2,064*	59.3
2008	*3,756*	*1,386*	36.9	*708*	18.9	*0*	0.0	*2,094*	55.8
2009	*4,150*	*1,548*	37.3	*670*	16.1	*129*	3.1	*2,347*	56.6
2010	*3,856*	*1,594*	41.3	*540*	14.0	*81*	2.1	*2,215*	57.4
2011	*3,836*	*1,810*	47.2	*437*	11.4	*NA*	NA	*2,247*	58.8
2012	*3,494*	*1,645*	47.1	*NA*	NA	*NA*	NA	*1,645*	47.1
Total	*32,734*	*12,498*	38.2	*4,935*	16.0	*782*	2.4	*18,215*	55.7

Notes. Cohort 2005 had five students uncoded for graduation status, therefore totals differ slightly from other analyses.
The 2008 cohort had no students who graduated at the 6-year point.
This data set was created prior to the addition of 5- and 6-year graduation statistics for the 2012 cohort, and 6-year graduation statistics for the 2011 cohort.
At the time of this analysis, statistics were not kept for students who graduated beyond the 6-year window.

Table D4

Number Count and Percentage of Students by Gender and Time to Graduation for Each Cohort Year

	4-Year				5-Year				6-Year			
Entry	Male		Female		Male		Female		Male		Female	
Year	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%
2004	*379*	26.0	*740*	39.3	*290*	19.9	*306*	16.2	*63*	4.3	*69*	3.7
2005	*362*	25.5	*691*	37.4	*264*	18.6	*318*	17.2	*68*	4.8	*71*	3.8
2006	*416*	26.5	*719*	36.3	*331*	21.1	*360*	18.2	*96*	6.1	*60*	3.0
2007	*428*	28.7	*780*	39.2	*328*	22.0	*383*	19.3	*69*	4.6	*76*	3.8
2008	*503*	31.7	*883*	40.7	*318*	20.0	*390*	18.0	*NA*	NA	*NA*	NA
2009	*571*	30.0	*977*	43.5	*309*	16.2	*361*	16.1	*59*	3.1	*70*	3.1
2010	*562*	32.5	*1,032*	48.5	*216*	12.5	*324*	15.2	*40*	2.3	*41*	1.9
2011	*635*	41.9	*1,175*	50.6	*194*	12.8	*243*	10.5	*NA*	NA	*NA*	NA
2012	*590*	41.0	*1,055*	51.3	*NA*	NA	*NA*	NA	*NA*	NA	*NA*	NA

Notes. The 2008 cohort had no students who graduated at the 6-year point.
This data set was created prior to the addition of 5- and 6-year graduation statistics for the 2012 cohort, and 6-year graduation statistics for the 2011 cohort.
At the time of this analysis, statistics were not kept for students who graduated beyond the 6-year window.

Table D5

Number of Students by Race and Time to Graduation for Each Cohort Year

Entry	White			Students of Color			International			Unknown		
Year	4-Yr	5-Yr	6-Yr	4-Yr	5-Yr	6-Yr	4-Yr	5-Yr	6-Yr	4-Yr	5-Yr	6-Yr
2004	1,017	543	112	72	35	14	2	0	0	28	18	6
2005	947	523	124	55	37	13	4	1	0	47	21	2
2006	1,039	620	143	54	54	9	5	1	0	37	16	4
2007	1,089	646	127	76	48	13	4	4	1	39	13	4
2008	1,305	626	NA	53	68	NA	5	1	NA	23	13	NA
2009	1,372	588	106	149	65	22	0	0	0	27	17	1
2010	1,419	467	66	155	67	14	11	2	1	9	4	0
2011	1,578	374	NA	207	57	0	10	1	NA	15	5	NA
2012	1,419	NA	NA	206	0	0	9	NA	NA	11	NA	NA

Notes. Three students in cohort 2004 and 2005 years were not coded.
The 2008 cohort had no students who graduated at the 6-year point.
Race or ethnicity was coded for domestic students only, in accordance with standard practice.
International students were coded as International regardless of race or ethnicity.
Unknown includes all students who declined to respond to the question requesting their race or ethnicity.

Table D6

Percentage of Students by Race and Time to Graduation for Each Cohort Year

Entry	White			Students of Color			International			Unknown		
Year	4-Yr	5-Yr	6-Yr	4-Yr	5-Yr	6-Yr	4-Yr	5-Yr	6-Yr	4-Yr	5-Yr	6-Yr
2004	34.0	18.2	3.7	31.0	15.1	6.0	50.0	0.0	0.0	25.2	16.2	5.4
2005	32.8	18.1	4.3	22.6	15.2	5.4	66.7	16.7	0.0	37.3	16.7	1.6
2006	32.7	19.5	4.5	20.3	20.4	3.4	41.7	8.3	0.0	36.3	15.7	3.9
2007	35.7	21.2	4.2	26.3	16.6	4.5	33.3	33.3	8.3	30.2	10.1	3.1
2008	39.1	18.8	NA	17.8	22.8	NA	41.7	8.33	NA	20.9	11.8	NA
2009	39.3	16.8	3.0	26.5	11.6	3.9	NA	NA	NA	28.4	17.9	1.1
2010	43.5	14.3	2.0	28.6	12.3	2.6	78.6	14.3	7.1	26.5	11.8	0.0
2011	48.6	11.5	NA	38.7	10.7	NA	62.5	6.3	NA	39.5	13.2	NA
2012	48.2	NA	NA	41.3	NA	NA	42.9	NA	NA	36.7	NA	NA

Notes. Three students in cohort 2004 and 2005 years were not coded.
The 2008 cohort had no students who graduated at the 6-year point.
Race or ethnicity was coded for domestic students only, in accordance with standard practice.
International students were coded as International regardless of race or ethnicity.
Unknown includes all students who declined to respond to the question requesting their race or ethnicity.

Table D7

Mean GPA for High School, End of First Year of College, and At Time of Graduation by Time to Graduation for Each Cohort Year

Entry	4-Year			5-Year			6-Year		
Year	HS	1-Year	Grad	HS	1-Year	Grad	HS	1-Year	Grad
2004	3.42	2.48	3.29	3.24	2.49	3.00	3.18	2.35	2.84
2005	3.45	2.51	3.33	3.24	2.48	3.06	3.15	2.41	2.82
2006	3.41	2.56	3.35	3.17	2.45	3.00	3.08	2.38	2.79
2007	3.39	2.55	3.35	3.22	2.54	3.05	3.09	2.42	2.87
2008	3.40	2.54	3.34	3.20	2.52	3.05	NA	NA	NA
2009	3.44	3.25	3.33	3.26	2.96	3.05	3.21	2.76	2.84
2010	3.46	3.28	3.33	3.30	3.00	3.06	3.23	2.77	2.82
2011	3.47	3.27	3.33	3.31	2.95	2.99	NA	NA	NA
2012	3.49	3.25	3.33	NA	NA	NA	NA	NA	NA

Notes. The 2008 cohort had no students who graduated at the 6-year point.
This data set was created prior to the addition of 5- and 6-year graduation statistics for the 2012 cohort, and 6-year graduation statistics for the 2011 cohort.
At the time of this analysis, statistics were not kept for students who graduated beyond the 6-year window.
GPA is calculated on a 4-point scale.

Table D8

Mean SAT Verbal and Math Scores by Time to Graduation for Each Cohort Year

Entry	4-Year		5-Year		6-Year	
Year	Verbal	Math	Verbal	Math	Verbal	Math
2004	532	536	513	517	508	506
2005	537	538	520	519	510	508
2006	531	541	501	513	497	505
2007	528	537	514	519	496	515
2008	527	539	503	516	NA	NA
2009	529	538	514	519	495	502
2010	534	541	521	527	521	526
2011	533	537	513	515	NA	NA
2012	526	531	NA	NA	NA	NA

Notes. The 2008 cohort had no students who graduated at the 6-year point.
This data set was created prior to the addition of 5- and 6-year graduation statistics for the 2012 cohort, and 6-year graduation statistics for the 2011 cohort.
At the time of this analysis, statistics were not kept for students who graduated beyond the 6-year window.

Table D9

Mean, Standard Deviation, and N for Spirituality and Grit for 2004 Cohort (Research Question 1).

Item	M	SD	*N*
Spirituality			
Religious activities	3.34	1.282	*2,588*
Discuss with students whose beliefs or values are different from yours	3.26	1.048	*2,593*
Develop own values and ethics*	1.61	0.623	*2,586*
Gain better understanding of yourself*	1.49	0.585	*2,562*
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)**	2.14	1.114	*384*
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics**	2.66	1.006	*354*
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality**	1.79	1.018	*353*
Grit			
Managing my time well	2.32	0.810	*2,592*
Rate: academic self-confidence	2.45	0.828	*2,596*
Rate: self-motivation	2.42	0.883	*2,596*
Rate: ability to set goals	2.30	0.819	*2,603*
Rate: manage time	2.51	0.819	*2,601*
Rate: get started on tasks	2.62	0.840	*2,605*
Rate: stick with tasks	2.52	0.827	*2,602*
Rate: complete tasks on time	2.22	0.804	*2,603*
Rate: ability to manage stress	2.63	0.895	*2,602*
Develop independence*	1.35	0.530	*2,576*
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations**	2.67	0.812	*393*

Notes. Participation in the Mapworks survey was substantially higher than participation in the NSSE survey, hence the wide disparity in *N*.
Unless otherwise noted, means are based on a 5-point scale.
*Mean is based on a 3-point scale.
**Mean is based on a 4-point scale.

Table D10

Correlation Between Grit and Spirituality for 2004 Cohort (Research Question 1)

	Spirituality Items						
Grit Items	1	2	3	4	5	6	7
Managing my time well	.083**	.050*	.097**	.076**	.028	.062	.072
Rate: academic self-confidence	.135**	.135**	.058**	.055**	.122*	.013	.066
Rate: self-motivation	.188**	.125**	.114**	.094**	.207**	.082	.120*
Rate: ability to set goals	.172**	.122**	.164**	.135**	.167**	-.013	.033
Rate: manage time	.143**	.091**	.100**	.081**	.201**	.020	.145**
Rate: get started on tasks	.145**	.089**	.120**	.092**	.170**	.070	.111*
Rate: stick with tasks	.154**	.119**	.113**	.086**	.206**	.059	.128*
Rate: complete tasks on time	.146**	.098**	.121**	.106**	.122*	.030	.092
Rate: ability to manage stress	.120**	.089**	.027	.010	.068	.063	.003
Develop independence	.106**	.109**	.425**	.460**	-.046	.179**	.031
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	.023	-.016	.106*	.069	.064	.350**	.288**

Notes. 1 = Religious activities, 2 = Discuss with students whose beliefs or values are different from yours, 3 = Develop own values and ethics, 4 = Gain better understanding of yourself, 5 = Participated in activities to enhance your spirituality, 6 = Institutional contribution: Developing a personal code of values or ethics, 7 = Institutional contribution: Developing a deepened sense of spirituality.

The 2004 Mapworks survey items are reverse coded when analyzed with the academic and NSSE survey items, so in reporting these items, the direction of correlation has been reversed to reflect this coding.

** $p \leq .01$; * $p \leq .05$.

Table D11

Mean, Standard Deviation, and N for Spirituality and Grit for 2005 Cohort (Research Question 1).

Item	M	SD	*N*
Spirituality			
Religious activities	3.32	1.272	*2,567*
Discuss with students whose beliefs or values are different from yours	3.20	1.065	*2,571*
Develop own values and ethics*	1.59	0.613	*2,571*
Gain better understanding of yourself*	1.48	0.590	*2,556*
Grit			
Managing my time well	2.36	0.836	*2,581*
Rate: academic self-confidence	2.45	0.836	*2,583*
Rate: self-motivation	2.43	0.913	*2,584*
Rate: ability to set goals	2.30	0.814	*2,590*
Rate: manage time	2.51	0.811	*2,584*
Rate: get started on tasks	2.62	0.842	*2,585*
Rate: stick with tasks	2.53	0.838	*2,588*
Rate: complete tasks on time	2.23	0.815	*2,586*
Rate: ability to manage stress	2.64	0.909	*2,587*
Develop independence*	1.37	0.551	*2,557*

Notes. The NSSE survey was not administered to this cohort.
Unless otherwise noted, means are based on a 5-point scale.
*Mean is based on a 3-point scale.

Table D12

Correlation Between Grit and Spirituality for 2005 Cohort (Research Question 1)

	Spirituality Items			
Grit Items	1	2	3	4
Managing my time well	.082**	.059**[2]	.083**	.082**
Rate: academic self-confidence	.095**	.127**	.070**	.056**
Rate: self-motivation	.158**	.073**	.127**	.101**
Rate: ability to set goals	.147**	.097**	.137**	.134**
Rate: manage time	.126**	.092**	.097**	.103**
Rate: get started on tasks	.121**	.093**	.112**	.117**
Rate: stick with tasks	.104**	.090**	.123**	.114**
Rate: complete tasks on time	.142**	.085**	.108**	.121**
Rate: ability to manage stress	.044*[1]	.037	.045*[3]	.000
Develop independence	.089**	.109**	.453**	.508**

Notes. 1 = Religious activities, 2 = Discuss with students whose beliefs or values are different from yours, 3 = Develop own values and ethics, 4 = Gain better understanding of yourself.
** $p \leq .01$; * $p \leq .05$.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [1] = No Significance; [2] = $p \leq .05$.

Table D13

Mean, Standard Deviation, and N for Spirituality and Grit for 2006 Cohort (Research Question 1).

Item	M	SD	*N*
Spirituality			
Religious activities	3.45	2.046	*2,979*
Grit			
Is self-disciplined	5.46	1.297	*2,997*
Is a self-starter	5.29	1.299	*2,992*
Is reliable	6.11	0.999	*2,994*
Is dependable	6.14	0.999	*2,995*
Does work before play	5.04	1.346	*2,994*
Plans out time	5.24	1.403	*2,989*
Sticks to time plan	4.99	1.437	*2,990*
Ability to manage your time	5.16	1.223	*3,000*
Mapworks Factor: Commitment	6.71	0.804	*2,920*
Mapworks Factor: Self-confidence	4.84	1.059	*2,991*
Mapworks Factor: Self-evaluation	4.89	0.933	*2,972*

Notes. The NSSE survey was not administered to this cohort.
Unless otherwise noted, means are based on a 7-point scale.

Table D14

Correlation Between Grit and Spirituality for 2006 Cohort (Research Question 1)

	Spirituality Items
Grit Items	1
Is self-disciplined	.112**
Is a self-starter	.137**
Is reliable	.072**
Is dependable	.067**
Does work before play	.148**
Plans out time	.167**
Sticks to time plan	.141**
Ability to manage your time	.133**
Mapworks Factor: Commitment	.000
Mapworks Factor: Self-confidence	.137**
Mapworks Factor: Self-evaluation	.157**

Notes. 1 = Religious Activities.
** $p \leq .01$.

Table D15

Mean, Standard Deviation, and N for Spirituality and Grit for 2007 Cohort (Research Question 1)

Item	M	SD	*N*
Spirituality			
Intend to be involved in religiously oriented groups or activities	6.63	17.888	*2,919*
Grit			
Is self-disciplined	7.13	12.117	*2,953*
Is a self-starter	6.95	12.266	*2,950*
Is reliable	7.73	12.385	*2,950*
Follows through with what you say you are going to do	7.56	12.288	*2,952*
Is dependable	7.74	12.155	*2,944*
Does your work before play	6.55	12.214	*2,949*
Plans out your time	6.69	12.079	*2,948*
Sticks to your time plan	6.93	13.585	*2,939*
Do even the hardest work assigned in your classes	6.84	12.417	*2,947*
Persevere on class projects even when there are challenges	7.16	12.851	*2,940*
Spends sufficient time studying to earn the grades you want	7.46	13.490	*2,941*

Notes. The NSSE survey was not administered to this cohort.
Unless otherwise noted, means are based on a 7-point scale (The use of 99 = Not Applicable skews means higher than the scale).

Table D16

Correlation Between Grit and Spirituality for 2007 Cohort (Research Question 1)

	Spirituality Items
Grit Items	1
Is self-disciplined	.526**
Is a self-starter	.521**
Is reliable	.508**
Follows through with what you say you are going to do	.514**
Is dependable	.521**
Does your work before play	.527**
Plans out your time	.518**
Sticks to your time plan	.487**
Do even the hardest work assigned in your classes	.561**
Persevere on class projects even when there are challenges	.534**
Spends sufficient time studying to earn the grades you want	.645**

Notes. 1 = Intend to be involved in religiously oriented groups or activities.
**$p \leq .01$.

Table D17

Mean, Standard Deviation, and N for Spirituality and Grit for 2008 Cohort (Research Question 1)

Item	Survey Year	M	SD	*N*
Spirituality				
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)*	NSSE	2.13	1.135	*632*
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Understanding yourself*	NSSE	2.87	0.916	*601*
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics*	NSSE	2.74	0.954	*608*
Institutional contribution: Developing a deepened sense of spirituality*	NSSE	1.88	1.036	*609*

Notes. Unless otherwise noted, means are based on a 7-point scale.
*Mean is based on a 4-point scale.

Table D17 (Cont.)

Mean, Standard Deviation, and N for Spirituality and Grit for 2008 Cohort (Research Question 1)

Item	Survey Year	M	SD	*N*
Grit				
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	5.40	1.153	*3,302*
	FTSO	5.61	1.173	*1,543*
Is a self-starter	FTFY	5.18	1.151	*3,264*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	FTFY	5.59	1.056	*3,296*
	FTSO	5.79	1.059	*1,546*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	6.03	0.970	*3,297*
	FTSO	6.15	0.944	*1,542*
Does work before play	FTFY	4.78	1.324	*3,298*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	4.96	1.398	*3,293*
	FTSO	5.26	1.389	*1,542*
Sticks to your time plan	FTFY	4.77	1.383	*3,283*
Do even the hardest work assigned in your classes	FTFY	5.37	1.248	*3,283*
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTFY	5.04	1.277	*3,275*
	FTSO	5.24	1.247	*1,498*
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	5.47	1.157	*3,248*
	FTSO	5.63	1.120	*1,488*
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn the grades you want	FTFY	5.45	1.233	*3,267*
	FTSO	7.00	6.776	*956*
Motivated to complete your academic work	FTFY	5.65	1.184	*3,274*
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations*	NSSE	2.80	0.826	*651*

Notes. Unless otherwise noted, means are based on a 7-point scale.

*Mean is based on a 4-point scale.

For the 2008 Cohort, responses to Mapworks surveys for both Freshman Year (FTFY); and First Time Sophomores (FTSO) were available, although many survey items were not duplicated.

Table D18

Correlation Between Grit and Spirituality for 2008 Cohort (Research Question 1)

Grit Items	Survey Year	Spirituality Items 1	2	3	4
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	.021	.061	.036	.037
	FTSO	.091[2]	.161**	.140**	.129**[2]
Is a self-starter	FTFY	.015	.079	.047	.069
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	FTFY	.001	.034[2]^	.007	.085*[1]+
	FTSO	.009	.112*	.070	.053
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	.020	.047	.025	.018
	FTSO	-.021	.122*[3]	.102*	.048
Does work before play	FTFY	-.045	.078	.089*	.103*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	.000	.043	.107**	.136**
	FTSO	.055	.173**	.150**	.184**
Sticks to your time plan	FTFY	-.012	.083*	.130*	.113**
Do even the hardest work assigned in your classes	FTFY	.021	.052	.042	.027
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTFY	-.023	.073	.038	.035
	FTSO	.071	.124*	.156**	.136**[2]
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	.036	.053	.046	.024
	FTSO	.111*[1]	.116*	.153**	.122*[2]
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn the grades you want	FTFY	.067[2]	.043	.078[2]	.068[2]
	FTSO	.050	.121*	.190**	.164**
Motivated to complete your academic work	FTFY	.044	.074[2]	.149**	.123**
Worked harder than you thought you could to meet an instructor's standards or expectations	NSSE	-.023	.247**	.284**	.191**

Notes. 1 = Participated in activities to enhance your spirituality, 2 = Institutional contribution.: Understanding yourself; 3 = Institutional contribution.: Developing a personal code of values and ethics; 4 = Institutional contribution.: Developing a deepened sense of spirituality.

** $p \leq .01$; * $p \leq .05$.

For the 2008 Cohort, responses to Mapworks surveys for both Freshman Year (FTFY); and First Time Sophomores (FTSO) were available although many survey items were not duplicated.

Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [1] = No Significance; [2] = $p \leq .05$; [3] = $p \leq .01$; + = Change in correlational direction.

^Difference in significance found only in Spearman's rho; Kendall's tau_b had the same levels of significance as Pearson's.

Table D19

Mean, Standard Deviation, and N for Spirituality and Grit for 2009 Cohort (Research Question 1)

Item	Survey Year	M	SD	*N*
Spirituality				
No survey items inquired about student spirituality or values for this cohort.				
Grit				
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	5.59	1.117	*3,448*
	FTSO	6.07	5.926	*1,286*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you are going to do	FTFY	5.77	1.033	*3,445*
	FTSO	6.23	5.284	*1,287*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	6.17	0.895	*3,439*
	FTSO	6.62	5.856	*1,281*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	5.12	1.360	*3,445*
	FTSO	5.92	5.379	*1,281*
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTSO	5.78	7.073	*1,262*
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	5.42	1.149	*3,383*
	FTSO	6.16	6.530	*1,253*
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	FTFY	5.49	1.160	*3,399*
	FTSO	6.22	6.983	*1,278*

Notes. Unless otherwise noted, means are based on a 7-point scale.
For the 2009 Cohort, responses to Mapworks surveys for both Freshman Year (FTFY); and First Time Sophomores (FTSO) were available although many survey items were not duplicated.

Table D20

Mean, Standard Deviation, and N for Spirituality and Grit for 2010 Cohort (Research Question 1)

Item	M	SD	*N*
Spirituality			
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	3.02	0.880	*41*
How much has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing or clarifying a personal code of values and ethics	2.76	1.051	*38*
Grit			
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	5.74	3.957	*3,041*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	6.01	3.906	*3,041*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	6.42	4.541	*3,034*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	5.60	4.368	*3,030*
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	6.12	6.261	*3,014*
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	0.04	0.203	*3,031*
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	5.80	5.749	*3,028*

Note. Unless otherwise noted, means are based on a 7-point scale.

Table D21

Correlation Between Grit and Spirituality for 2010 Cohort (Research Question 1)

	Spirituality Items	
Grit Items	1	2
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	-.196	.033
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	-.138	.074
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	-.083	.040
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	-.135	.124
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	.054	.233
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	-.007	-.131
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	-.290	.133

Note. 1 = Had discussions with people with religious beliefs different from your own, 2 = Developing your own code of values and ethics.

Table D22

Mean, Standard Deviation, and N for Spirituality and Grit for 2011 Cohort (Research Question 1)

Item	M	SD	*N*
Spirituality			
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)*	1.97	1.098	*943*
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Understanding yourself*	2.76	0.912	*882*
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics*	2.59	0.947	*881*
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality*	1.94	1.021	*886*
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own*	3.04	0.866	*226*
Perceived gains: Developing or clarifying a personal code of values and ethics*	2.88	0.967	*204*

Notes. Unless otherwise noted, means are based on a 7-point scale.
*Mean is based on a 4-point scale.

Table D22 (Cont.)

Mean, Standard Deviation, and N for Spirituality and Grit for 2011 Cohort (Research Question 1)

Item	M	SD	*N*
Grit			
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	5.77	4.729	*3,332*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	6.03	4.084	*3,324*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	6.41	4.343	*3,326*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	5.63	4.494	*3,317*
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	5.25	6.020	*3,316*
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	6.06	7.882	*3,292*
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	5.86	5.243	*3,330*
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations*	2.65	0.847	*948*

Notes. Unless otherwise noted, means are based on a 7-point scale.
*Mean is based on a 4-point scale.

Table D23

Correlation Between Grit and Spirituality for 2011 Cohort (Research Question 1)

	Spirituality Items					
Grit Items	1	2	3	4	5	6
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	.083*	.112**	.081*	.085*	-.087	.174*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	.096**	.087*[3]	.077*	.074*	-.134[2]	.210**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	.076*	.057[2]	.033[3]	.081*[1]	-.037	.195**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	.108**	.102**	.115**	.124**	-.079	.123
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	-.026[2]+	.083*[3]	.055[3]	-.034+	-.038	.164*
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	.022[3]	.023[3]	.014[3]	-.022+	.080	.088
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	.174**	.175**	.136**	.139**	-.084	.127
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	.078*[3]	.251**	.238**	.200**	.050	.156

Notes. 1 = Participated in activities to increase your Spirituality, 2 = Institutional contribution: Understanding yourself, 3 = Institutional contribution: Developing a personal code of values and ethics, 4 = Institutional contribution: Developing a deepened sense of spirituality, 5 = Had discussions with people with religious beliefs other than your own, 6 = Perceived gains: Developing or clarifying a personal code of values and ethics.
** $p \leq .01$; * $p \leq .05$.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [1] = No Significance; [2] = $p \leq .05$; [3] = $p \leq .01$; + = Change in correlational direction.

Table D24

Mean, Standard Deviation, and N for Spirituality and Grit for 2012 Cohort (Research Question 1)

Item	Survey Year	M	SD	*N*
Spirituality				
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own*	NSSE	3.00	0.845	*29*
Perceived gains? Developing or clarifying a personal code of values and ethics*	NSSE	2.85	1.047	*26*
Grit				
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	5.64	1.137	*3,094*
	FTSO	5.77	1.096	*1,198*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	FTFY	5.89	0.990	*3,078*
	FTSO	6.00	0.943	*1,190*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	6.21	0.899	*3,084*
	FTSO	6.28	0.855	*1,183*
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	5.48	1.327	*3,080*
	FTSO	5.61	1.275	*1,183*
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTFY	4.99	1.227	*3,071*
	FTSO	5.22	1.176	*1,174*
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	5.54	1.099	*3,053*
	FTSO	5.75	1.024	*1,170*
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	FTFY	5.53	1.205	*3,093*
	FTSO	5.69	1.103	*1,182*

Notes. Unless otherwise noted, means are based on a 7-point scale.
*Mean is based on a 4-point scale.
For the 2012 Cohort, responses to Mapworks surveys for both Freshman Year (FTFY); and First Time Sophomores (FTSO) were available, although many survey items were not duplicated.

Table D25

Correlation Between Grit and Spirituality for 2012 Cohort (Research Question 1)

Grit Items	Survey Year	Spirituality Items 1	2
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	.297[2]	-.011
	FTSO	.271	.338
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	FTFY	.245	.044
	FTSO	.259	.346
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	.397*	.119
	FTSO	.667*[1]	.093
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	.041	.184
	FTSO	.091	.800*
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTFY	.287[2]	.081
	FTSO	.143	.000
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	.235	-.119
	FTSO	-.045	.258
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	FTFY	.000	-.035+
	FTSO	.143+	-.169

Notes. 1 = Had discussions with people with religious beliefs different from your own, 2 = Perceived Gains: Developing your own code of values and ethics.

For the 2012 Cohort, responses to Mapworks surveys for both Freshman Year (FTFY); and First Time Sophomores (FTSO) were available, although many survey items were not duplicated.

** $p \leq .01$; * $p \leq .05$.

Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [1] = No Significance; [2] = $p \leq .05$; [3] = $p \leq .01$; + = Change in correlational direction.

Table D26

Correlation Between Spirituality and Grit and Time to Graduation for 2004 Cohort (Research Question 2)

Item	4-Year	5-Year	6-Year
Spirituality			
Religious activities	.112**	.087**	.088**
Discuss with students whose beliefs or values are different from yours	.023	.004	.012
Develop own values and ethics	.050*	.031	.032
Gain better understanding of yourself	.039*	.036	.020
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	.074	.045	.062
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics	-.032	-.075	-.067
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality	.036	.070	.079
Grit			
Managing my time well	.090**	.065**	.052**
Rate: academic self-confidence	.093**	.072**	.060**
Rate: self-motivation	.129**	.114**	.107**
Rate: ability to set goals	.105**	.067**	.057**
Rate: manage time	.118**	.093**	.086**
Rate: get started on tasks	.094**	.078**	.063**
Rate: stick with tasks	.119**	.098**	.088**
Rate: complete tasks on time	.152**	.135**	.127**
Rate: ability to manage stress	.022	.005	-.004
Develop independence	.070**	.060**	.051**
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	.055	.089	.084

Notes. The 2004 Mapworks survey items are reverse coded when analyzed with the academic and NSSE survey items so in reporting these items, the direction of correlation has been reversed to reflect this coding.
** $p \leq .01$.

Table D27

Correlation Between Spirituality and Grit and Time to Graduation for 2005 Cohort (Research Question 2)

Item	4-Year	5-Year	6-Year
Spirituality			
Religious activities	.100**	.120**	.109**
Discuss with students whose beliefs or values are different from yours	.053**	.045*	.042*
Develop own values and ethics	.037	.049*	.051**
Gain better understanding of yourself	.044*	.053**	.052**
Grit			
Managing my time well	.076**	.078**	.068**
Rate: academic self-confidence	.144**	.118**	.104**
Rate: self-motivation	.147**	.139**	.123**
Rate: ability to set goals	.141**	.119**	.101**
Rate: manage time	.140**	.126**	.111**
Rate: get started on tasks	.124**	.108**	.092**
Rate: stick with tasks	.131**	.122**	.107**
Rate: complete tasks on time	.187**	.171**	.158**
Rate: ability to manage stress	.058**	.070**	.058**
Develop independence	.054**	.066**	.058**

Notes. The 2005 Mapworks survey items are reverse coded when analyzed with the academic survey items so in reporting these items, the direction of correlation has been reversed to reflect this coding.
** $p \leq .01$; * $p \leq .05$.

Table D28

Correlation Between Spirituality and Grit and Time to Graduation for 2006 Cohort (Research Question 2)

Item	4-Year	5-Year	6-Year
Spirituality			
Religious activities	.070**	.083**	.072**
Grit			
Is self-disciplined	.164**	.148**	.147**
Is a self-starter	.162**	.142**	.133**
Is reliable	.156**	.129**	.116**
Is dependable	.158**	.137**	.126**
Does work before play	.133**	.115**	.116**
Plans out time	.159**	.148**	.146**
Sticks to time plan	.143**	.127**	.125**
Ability to manage your time	.117**	.111**	.106**
Mapworks Factor: Commitment	.107**	.074**	.061**
Mapworks Factor: Self-confidence	.074**	.035	.032
Mapworks Factor: Self-evaluation	.138**	.123**	.120**

Note. ** $p \leq .01$.

Table D29

Correlation Between Spirituality and Grit and Time to Graduation for 2007 Cohort (Research Question 2)

Item	4-Year	5-Year	6-Year
Spirituality			
Intend to be involved in religiously oriented groups or activities	-.019[3]+	-.024[3]+	-.025[3]+
Grit			
Is self-disciplined	.023[3]	.031[3]	.025[3]
Is a self-starter	.024[3]	.035[3]	.029[3]
Is reliable	.011[3]	.021[3]	.014[3]
Follows through with what you say you are going to do	.015[3]	.021[3]	.019[3]
Is dependable	.016[3]	.023[3]	.021[3]
Does your work before play	.022[3]	.030[3]	.029[3]
Plans out your time	.027[3]	.030[3]	.028[3]
Sticks to your time plan	.023[3]	.032[3]	.029[3]
Do even the hardest work assigned in your classes	.014[3]	.013[3]	.007[3]
Persevere on class projects even when there are challenges	.017[3]	.013[3]	.006[3]
Spends sufficient time studying to earn the grades you want	.001[3]	.015[3]	.006[3]

Note. Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [3] = $p \leq .01$; + = Change in correlational direction

Table D30

Correlation Between Spirituality and Grit and Time to Graduation for 2008 Cohort (Research Question 2)

Item	Survey Year	4-Year	5-Year	6-Year
Spirituality				
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	NSSE	-.070	-.041	-.041
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Understanding yourself	NSSE	.022	.018	.018
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics	NSSE	-.012	-.039	-.039
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality	NSSE	.027	.049	.049

Table D30 (Cont.)

Correlation Between Spirituality and Grit and Time to Graduation for 2008 Cohort (Research Question 2)

Item	Survey Year	4-Year	5-Year	6-Year
Grit				
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	.136**	.147**	.147**
	FTSO	.149**	.159**	.159**
Is a self-starter	FTFY	.121**	.114**	.114**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	FTFY	.094**	.073**	.073**
	FTSO	.115**	.088**	.088**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	.099**	.082**	.082**
	FTSO	.130**	.076**	.076**
Does work before play	FTFY	.150**	.135**	.135**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	.142**	.141**	.141**
	FTSO	.147**	.122**	.122**
Sticks to your time plan	FTFY	.128**	.131**	.131**
Do even the hardest work assigned in your classes	FTFY	.082**	.082**	.082**
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTFY	.077**	.088**	.088**
	FTSO	.086**	.053*[1]	.053*[1]
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	.105**	.092**	.092**
	FTSO	.110**	.074**[2]	.074**[2]
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn the grades you want	FTFY	.132**	.142**	.142**
	FTSO	.151**	.122**	.122**
Motivated to complete your academic work	FTFY	.092**	.103**	.103**
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	NSSE	.010	-.058	-.058

Notes. ** $p \leq .01$; * $p \leq .05$.
For the 2009 Cohort, responses to Mapworks surveys for both Freshman Year (FTFY); and First Time Sophomores (FTSO) were available, although many survey items were not duplicated.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [1] = No Significance; [2] = $p \leq .05$.

Table D31

Correlation Between Spirituality and Grit and Time to Graduation for 2009 Cohort (Research Question 2)

Item	Survey Year	4-Year	5-Year	6-Year
Spirituality				
No survey items inquired about student spirituality or values for this cohort.				
Grit				
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	.141**	.138**	.132**
	FTSO	-.016[3]+	.008[3]	-.001[3]+
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you are going to do	FTFY	.106**	.094**	.092**
	FTSO	-.005[3]+	.024[3]	.018[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	.081**	.079**	.077**
	FTSO	-.031[3]+	.025[3]	.019[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	.144**	.131**	.138**
	FTSO	.007[3]	.042[3]	.032[3]
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTSO	-.004[3]+	.034[3]	.024[3]
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	.096**	.082**	.081**
	FTSO	-.019[3]+	.027[3]	.023[3]
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	FTFY	.113**	.116**	.113**
	FTSO	-.040[3]+	-.009[3]+	-.021[3]+

Notes. ** $p \leq .01$; * $p \leq .05$.
For the 2009 Cohort, responses to Mapworks surveys for both Freshman Year (FTFY); and First Time Sophomores (FTSO) were available, although many survey items were not duplicated.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [3] = $p \leq .01$; + = Change in correlational direction.

Table D32

Correlation Between Spirituality and Grit and Time to Graduation for 2010 Cohort (Research Question 2)

Item	4-Year	5-Year	6-Year
Spirituality			
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	.177	.080	.006
How much has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing or clarifying a personal code of values and ethics	-.121	-.068	-.167
Grit			
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	.044*[3]	.060**	.053**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	.030[3]	.047**	.042*[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	.020[3]	.031[3]	.026[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	.051**	.062**	.056**
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	-.021+	.007[3]	.013[3]
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	-.043*	-.034	-.021
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	.009[3]	.021[3]	.028[3]

Notes. ** $p \leq .01$; * $p \leq .05$.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [3] = $p \leq .01$; + = Change in correlational direction.

Table D33

Correlation Between Spirituality and Grit and Time to Graduation for 2011 Cohort (Research Question 2)

Item	4-Year	5-Year	6-Year
Spirituality			
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	.114**	.153**	NA
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Understanding yourself	.104**	.087**	NA
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics	.062	.031	NA
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality	.023	.015	NA
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	.018	.127	NA
Perceived gains? Developing or clarifying a personal code of values and ethics	.012	-.119	NA

Note. ** $p \leq .01$.

Table D33 (Cont.)

Correlation Between Spirituality and Grit and Time to Graduation for 2011 Cohort (Research Question 2)

Item	4-Year	5-Year	6-Year
Grit			
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	.010[3]	.010[3]	NA
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	.009[3]	-.007[3]+	NA
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	.011[3]	-.004[3]+	NA
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	.021[3]	.009[3]	NA
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	.011[3]	-.009[3]+	NA
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	-.009[3]+	-.017[3]+	NA
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	.024[3]	.020[3]	NA
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	.062	.047	NA

Note. Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [3] = $p \leq .01$; + = Change in correlational direction.

Table D34

Correlation Between Spirituality and Grit and Time to Graduation for 2012 Cohort (Research Question 2)

Item	Survey Year	4-Year	5-Year	6-Year
Spirituality				
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	NSSE 2015	.120	NA	NA
Perceived gains? Developing or clarifying a personal code of values and ethics	NSSE 2015	-.168	NA	NA
Grit				
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	.115**	NA	NA
	FTSO	.125**	NA	NA
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	FTFY	.072**	NA	NA
	FTSO	.112**	NA	NA
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	.091**	NA	NA
	FTSO	.075*	NA	NA
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	.124**	NA	NA
	FTSO	.148**	NA	NA
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTFY	.064**	NA	NA
	FTSO	.074*	NA	NA
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	.084**	NA	NA
	FTSO	.076**[2]	NA	NA
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	FTFY	.139**	NA	NA
	FTSO	.169**	NA	NA

Notes. ** $p \leq .01$; * $p \leq .05$.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [2] = $p \leq .05$.
FTFY = First Time Freshman Year; FTSO = First Time Sophomore

Table D35

Models of Predictors to Four-Year Graduation for 2004 Cohort (Supplement 1 to Research Question 2)

Model	Chi-square	Df	Sig.	Cox & Snell R^2	Nagelkerke R^2	% Predicted Correctly[+]
Constant	NA	NA	NA	NA	NA	58.3
Baseline	11.52	8	.174	.132	.178	66.7
Grit	10.88	8	.209	.081	.123	78.0
Spirituality	3.54	8	.896	.078	.117	76.4
Grit & Spirituality	7.069	8	.529	.149	.222	79.9

Note: [+]The cut value is .500

Table D36

Significant Variables Found Within Each Model for 2004 Cohort (Supplement 1 to Research Question 2)

Variable and Model	*B*	S.E	Wald	Sig.	Exp(B)	95% CI
Baseline Model						
Grad GPA	1.965	.210	87.768	.000**	7.136	[4.730, 10.764]
Gender	-0.318	.139	5.253	.022*	0.727	[0.554, 0.955]
1st Year GPA	-0.219	.111	3.873	.049*	0.803	[0.646, 0.999]
Grit Model						
Grad GPA	1.643	.667	6.063	.014**	5.168	[1.398, 19.106]
Complete tasks on time	-0.664	.343	3.738	.053*	0.515	[0.263, 1.009]
Ability to manage stress	0.488	.253	3.726	.054*	1.629	[0.993, 2.675]
Spirituality Model						
Grad GPA	1.273	.643	3.922	.048*	3.571	[1.013, 12.582]
Grit & Spirituality Model						
Grad GPA	1.805	.756	5.700	.017*	6.078	[1.381, 26.739]
Ability to manage stress	0.617	.285	4.693	.030*	1.853	[1.061, 3.236]
Complete tasks on time	-0.813	.386	4.435	.035*	0.444	[0.208, 0.945]

Notes. CI = Confidence interval, lower and upper limits.
** $p \leq .01$; * $p \leq .05$.

Table D37

Models of Predictors to Four-Year Graduation for 2005 Cohort (Supplement 1 to Research Question 2)

Model	Chi-square	Df	Sig.	Cox & Snell R^2	Nagelkerke R^2	% Predicted Correctly[+]
Constant	NA	NA	NA	NA	NA	57.0
Baseline	11.930	8	.154	.112	.151	65.3
Grit	19.494	8	.012**	.130	.175	67.7
Spirituality	8.936	8	.348	.109	.147	66.3
Grit & Spirituality	18.960	8	.015*	.131	.177	67.5

Notes: [+]The cut value is .500
** $p \leq .01$; * $p \leq .05$.

Table D38

Significant Variables Found Within Each Model for 2005 Cohort (Supplement 1 to Research Question 2)

Variable and Model	*B*	S.E	Wald	Sig.	Exp(B)	95% CI
Baseline Model						
Grad GPA	1.475	.204	52.489	.001***	4.372	[2.934, 6.517]
1st Year GPA	-0.275	.116	5.592	.018*	0.760	[0.605, 0.954]
HS GPA	0.431	.199	4.685	.030*	1.539	[1.042, 2.273]
Grit Model						
Grad GPA	1.497	.233	41.138	.001***	4.470	[2.829, 7.064]
1st Year GPA	-0.375	.130	8.317	.004**	0.687	[0.533, 0.887]
Spirituality Model						
Grad GPA	1.430	.226	39.928	.001***	4.178	[2.682, 6.511]
1st Year GPA	-0.338	.128	7.013	.008**	0.713	[0.556, 0.916]
HS GPA	0.498	.220	5.145	.023*	1.646	[1.070, 2.532]
Grit & Spirituality Model						
Grad GPA	1.493	.235	40.208	.001***	4.448	[2.804, 7.056]
1st Year GPA	-0.367	.132	7.781	.005**	0.693	[0.535, 0.897]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.

Table D39

Models of Predictors to Four-Year Graduation for 2006 Cohort (Supplement 1 to Research Question 2)

Model	Chi-square	Df	Sig.	Cox & Snell R^2	Nagelkerke R^2	% Predicted Correctly[+]
Constant	NA	NA	NA	NA	NA	52.8
Baseline	13.238	8	.104	.168	.224	68.1
Grit	2.923	8	.939	.177	.236	68.2
Spirituality	9.587	8	.295	.160	.214	67.5
Grit & Spirituality	4.241	8	.835	.176	.235	68.6

Note: [+]The cut value is .500

Table D40

Significant Variables Found Within Each Model for 2006 Cohort (Supplement 1 to Research Question 2)

Variable and Model	*B*	S.E	Wald	Sig.	Exp(B)	95% CI
Baseline Model						
Grad GPA	1.892	.207	83.446	.001***	6.636	[4.421, 9.960]
Gender	-0.414	.138	8.937	.003**	0.661	[0.504, 0.867]
Grit Model						
Grad GPA	1.874	.232	65.520	.001***	6.517	[4.140, 10.261]
Spirituality Model						
Grad GPA	1.884	.223	71.651	.001***	6.580	[4.254, 10.179]
Gender	-0.329	.150	4.823	.028*	0.720	[0.536, 0.965]
Grit & Spirituality Model						
Grad GPA	1.869	.233	64.621	.001***	6.485	[4.111, 10.229]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.

Table D41

Models of Predictors to Four-Year Graduation for 2007 Cohort (Supplement 1 to Research Question 2)

Model	Chi-square	Df	Sig.	Cox & Snell R^2	Nagelkerke R^2	% Predicted Correctly[+]
Constant	NA	NA	NA	NA	NA	56.4
Baseline	2.121	8	.977	.153	.205	67.1
Grit	12.397	8	.134	.160	.216	67.9
Spirituality	8.286	8	.406	.158	.212	67.9
Grit & Spirituality	9.398	8	.310	.161	.216	68.2

Note: [+]The cut value is .500

Table D42

Significant Variables Found Within Each Model for 2007 Cohort (Supplement 1 to Research Question 2)

Variable and Model	*B*	S.E	Wald	Sig.	Exp(B)	95% CI
Baseline Model						
Grad GPA	2.380	.177	180.658	.001***	10.801	[7.634, 15.281]
1st Year GPA	-0.269	.093	8.418	.004**	0.764	[0.637, 0.916]
HS GPA	-0.312	.155	4.072	.044*	0.732	[0.541, 0.991]
Grit Model						
Grad GPA	2.464	.197	157.120	.001***	11.749	[7.993, 17.271]
1st Year GPA	-0.302	.101	8.887	.003**	0.740	[0.606, 0.902]
Plans out your time	0.117	.059	3.899	.048*	1.124	[1.001, 1.261]
Spirituality Model						
Grad GPA	2.449	.193	161.589	.001***	11.578	[7.936, 16.889]
1st Year GPA	-0.271	.099	7.458	.006**	0.762	[0.627, 0.926]
Grit & Spirituality Model						
Grad GPA	2.478	.198	156.492	.001***	11.914	[8.081, 17.566]
1st Year GPA	-0.301	.102	8.762	.003**	0.740	[0.607, 0.903]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.

Table D43

Models of Predictors to Four-Year Graduation for 2008 Cohort (Supplement 1 to Research Question 2)

Model	Chi-square	Df	Sig.	Cox & Snell R^2	Nagelkerke R^2	% Predicted Correctly[+]
Constant	NA	NA	NA	NA	NA	63.0
Baseline	5.024	8	.755	.131	.178	69.6
Grit	7.133	8	.522	.073	.123	83.8
Spirituality	7.770	8	.456	.048	.077	81.8
Grit & Spirituality	5.757	8	.674	.090	.155	84.8

Note: [+]The cut value is .500

Table D44

Significant Variables Found Within Each Model for 2008 Cohort (Supplement 1 to Research Question 2)

Variable and Model	*B*	S.E	Wald	Sig.	Exp(B)	95% CI
Baseline Model						
Grad GPA	1.757	.169	107.479	.001***	5.794	[4.156, 8.076]
Student of Color	0.750	.221	11.489	.001***	2.116	[1.372, 3.265]
Grit Model						
No items were found that were individually significant in this model.						
Spirituality Model						
Student of Color	1.365	.426	10.251	.001***	3.915	[1.698, 9.026]
Grad GPA	0.895	.418	4.580	.032*	2.447	[1.078, 5.551]
Participated in activities to enhance your spirituality	-0.237	.117	4.093	.043*	0.789	[0.628, 0.993]
Grit & Spirituality Model						
Grad GPA	1.302	.633	4.227	.040*	3.675	[1.063, 12.711]
Follows through with what you say you are going to do (FTSO)	-0.654	.309	4.492	.034*	0.520	[0.284, 0.952]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.
FTSO = Question asked on Sophomore year survey.

Table D45

Models of Predictors to Four-Year Graduation for 2009 Cohort (Supplement 1 to Research Question 2)

Model	Chi-square	Df	Sig.	Cox & Snell R^2	Nagelkerke R^2	% Predicted Correctly[+]
Constant	NA	NA	NA	NA	NA	65.6
Baseline	4.910	8	.767	.123	.169	69.7
Grit	8.943	8	.347	.136	.192	73.1
Spirituality	No questions regarding spirituality were asked in any surveys conducted with this cohort.					
Grit & Spirituality						

Note: [+]The cut value is .500

Table D46

Significant Variables Found Within Each Model for 2009 Cohort (Supplement 1 to Research Question 2)

Variable and Model	*B*	S.E	Wald	Sig.	Exp(B)	95% CI
Baseline Model						
Grad GPA	1.486	.197	56.925	.001***	4.421	[3.005, 6.505]
1st Year GPA	0.406	.169	5.757	.016*	1.502	[1.077, 2.093]
Grit Model						
Grad GPA	1.276	.330	14.914	.001***	3.583	[1.875, 6.847]
Plans out your time (FTSO)	0.221	.085	6.787	.009**	1.248	[1.056, 1.474]
Follows through with what you say you are going to do (FTSO)	0.352	.142	6.145	.013**	1.422	[1.076, 1.877]
Spends sufficient study time to earn good grades (FTFY)	-0.201	.099	4.105	.043*	0.818	[0.674, 0.993]
Is dependable (FTSO)	-0.285	.144	3.921	.048*	0.752	[0.568, 0.997]

Notes. CI = Confidence interval, lower and upper limits;
FTFY = Question asked on Freshman year survey; FTSO = Question asked on Sophomore Year survey.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.

Table D47

Models of Predictors to Four-Year Graduation for 2010 Cohort (Supplement 1 to Research Question 2)

Model	Chi-square	Df	Sig.	Cox & Snell R^2	Nagelkerke R^2	% Predicted Correctly[+]
Constant	NA	NA	NA	NA	NA	71.5
Baseline	7.667	8	.467	.100	.143	73.0
Grit	14.164	8	.078	.102	.146	74.1
Spirituality	Missing data and low respondent numbers for the spirituality variables created a failure condition in SPSS for calculating these models.					
Grit & Spirituality						

Note: [+]The cut value is .500

Table D48

Significant Variables Found Within Each Model for 2010 Cohort (Supplement 1 to Research Question 2)

Variable and Model	*B*	S.E	Wald	Sig.	Exp(B)	95% CI
Baseline Model						
Grad GPA	1.306	.202	41.687	.001***	3.691	[2.483, 5.486]
1st Year GPA	.553	.183	9.133	.003***	1.739	[1.215, 2.489]
Gender	.305	.123	6.125	.013*	1.356	[1.065, 1.726]
Grit Model						
Grad GPA	1.432	.219	42.677	.001***	4.187	[2.725, 6.435]
Gender	.331	.137	5.872	.015*	1.392	[1.065, 1.820]
1st Year GPA	.462	.198	5.432	.020*	1.587	[1.076, 2.340]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.

Table D49

Models of Predictors to Four-Year Graduation for 2011 Cohort (Supplement 1 to Research Question 2)

Model	Chi-square	Df	Sig.	Cox & Snell R^2	Nagelkerke R^2	% Predicted Correctly$^+$
Constant	NA	NA	NA	NA	NA	80.0
Baseline	7.710	8	.462	.089	.140	80.1
Grit	14.217	8	.076	.132	.229	85.4
Spirituality	18.481	8	.018*	.177	.353	90.9
Grit & Spirituality	9.173	8	.328	.209	.401	92.3

Notes: $^+$The cut value is .500
* $p \leq .05$.

Table D50

Significant Variables Found Within Each Model for 2011 Cohort (Supplement 1 to Research Question 2)

Variable and Model	*B*	S.E	Wald	Sig.	Exp(B)	95% CI
Baseline Model						
Grad GPA	1.800	.245	53.799	.001***	6.051	[3.740, 9.790]
SAT Math	0.002	.001	3.970	.046*	1.002	[1.000, 1.004]
Grit Model						
Grad GPA	1.899	.545	12.131	.001***	6.681	[2.294, 19.455]
Gender	-0.585	.278	4.434	.035*	0.557	[0.323, 0.960]
Student of Color	-1.285	.612	4.406	.036*	0.277	[0.083, 0.918]
Spirituality Model						
1st Year GPA	6.173	2.513	6.031	.014**	479.474	[3.478, 66,099.596]
Grit & Spirituality Model						
1st Year GPA	6.927	3.171	4.771	.029*	1,019.562	[2.037, 510,353.468]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.

Table D51

Models of Predictors to Four-Year Graduation for 2012 Cohort (Supplement 1 to Research Question 2)

Model	Chi-square	Df	Sig.	Cox & Snell R^2	Nagelkerke R^2	% Predicted Correctly[+]
Constant	NA	NA	NA	NA	NA	52.2
Baseline[4]	16.227	8	.039*	.272	.363	72.2
Grit	7.345	8	.500	.134	.195	74.3
Spirituality	Missing data and low respondent numbers for the spirituality variables created a failure condition in SPSS for calculating these models.					
Grit & Spirituality						

Notes: [+]The cut value is .500
[4] Grad GPA was not included in this Baseline model because it had not been calculated for the entire group and created a 'less than two variables' condition, causing a failure for SPSS calculations.
* $p \leq .05$.

Table D52

Significant Variables Found Within Each Model for 2012 Cohort (Supplement 1 to Research Question 2)

Variable and Model	*B*	S.E	Wald	Sig.	Exp(B)	95% CI
Baseline						
1st Year GPA	2.007	.104	369.960	.001***	7.443	[6.066, 9.133]
Grit						
1st Year GPA	1.585	.229	47.783	.001***	4.880	[3.113, 7.650]
Follow through with what you say you are going to do (FTSO)	0.280	.131	4.611	.032*	1.324	[1.025, 1.710]
Plans out your time (FTSO)	0.167	.083	4.016	.045*	1.181	[1.004, 1.390]

Notes. CI = Confidence interval, lower and upper limits.
FTSO = Question asked on Sophomore Year survey
*** $p \leq .001$; * $p \leq .05$.

Table D53

Correlation Between Spirituality and Grit and Graduation GPA for 2004 Cohort (Supplement 2 to Research Question 2)

Item	Grad GPA
Spirituality	
Religious activities	.137**
Discuss with students whose beliefs or values are different from yours	.108**
Develop own values and ethics	.046[2]
Gain better understanding of yourself	.063*
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	.190**
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics	.030
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality	-.022
Grit	
Managing my time well	.087**
Rate: academic self-confidence	.239**
Rate: self-motivation	.210**
Rate: ability to set goals	.187**
Rate: manage time	.187**
Rate: get started on tasks	.162**
Rate: stick with tasks	.184**
Rate: complete tasks on time	.250**
Rate: ability to manage stress	.029
Develop independence	.083**
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	.004

Notes. The 2004 Mapworks survey items are reverse coded when analyzed with the academic and NSSE survey items, so in reporting these items the direction of correlation has been reversed to reflect this coding.
** $p \leq .01$; * $p \leq .05$.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [2] = $p \leq .05$.

Table D54

Models of Predictors to Grad GPA for 2004 Cohort (Supplement 2 to Research Question 2)

				Std.	Change Statistics				
Model	R	R square	Adj. R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Baseline	.694[a]	.481	.478	.31580	.481	183.931	6	1,191	.001***
Grit	.698[b]	.487	.443	.27680	.059	2.066	11	196	.024*
Spirituality	.667[c]	.445	.404	.29186	.029	1.340	7	177	.234
Grit & Spirituality	.712[d]	.506	.432	.28431	.027	1.265	7	159	.271

Notes: a. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath.

b. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath, Develop independence, Rate - get started on tasks, Worked harder than you thought you could to meet an instructor's standards or expectations, Rate - ability to manage stress, Rate - academic self-confidence, Managing my time well, Rate - ability to set goals, Rate - complete tasks on time, Rate - self motivation, Rate - stick with tasks,
Rate - manage time.

c. Predictors: (Constant), Student of Color, Gender, SATVerbal, cum GPA at End of 1st Year, High School GPA, SATMath, Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.), Institutional contribution: Developing a personal code of values and ethics, Develop own values and ethics, Discus w students whose beliefs or values are different, Religious activities, Gain better understanding of self, Institutional contribution: Developing a deepened sense of spirituality.

d. Predictors: (Constant), Student of Color, Gender, SATVerbal, cum GPA at End of 1st Year, High School GPA, SATMath, Develop independence, Rate - ability to set goals, Worked harder than you thought you could to meet an instructor's standards or expectations, Rate - ability to manage stress, Rate - academic self-confidence, Managing my time well, Rate - complete tasks on time, Rate - stick with tasks, Rate - self motivation, Rate - get started on tasks, Rate - manage time, Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.), Institutional contribution: Developing a personal code of values and ethics, Develop own values and ethics, Discus w students whose beliefs or values are different, Religious activities, Gain better understanding of self, Institutional contribution: Developing a deepened sense of spirituality.

*** $p \leq .001$; * $p \leq .05$.

Table D55

Significant Variables Found Within Each Model for 2004 Cohort (Supplement 2 to Research Question 2)

Variable and Model	B	S.E	β	t	Sig.	95% CI
Baseline Model						
HS GPA	.485	.026	.483	18.947	.001***	[0.435, 0.535]
1st Year GPA	.155	.016	.210	9.984	.001***	[0.125, 0.18]
SAT Verbal	.001	.000	.215	8.058	.001***	[0.001, 0.002]
Gender	.144	.020	.160	7.154	.001***	[0.104, 0.183]
Grit Model						
HS GPA	.508	.069	.529	7.401	.001***	[0.373, 0.643]
1st Year GPA	.138	.033	.227	4.148	.001***	[0.072, 0.204]
SAT Verbal	.001	.000	.153	2.192	.030*	[0.000, 0.001]
Worked harder than you thought you could to meet an instructor's standards	.055	.026	.118	2.108	.036*	[0.004, 0.107]
Spirituality Model						
HS GPA	.579	.076	.563	7.646	.001***	[0.430, 0.729]
1st Year GPA	.139	.038	.213	3.620	.001***	[0.063, 0.215]
Gain better understanding of self+	-.123	.044	-.185	-2.796	.006**	[-0.210, -0.036]
Grit & Spirituality Model						
HS GPA	.543	.079	.532	6.843	.001***	[0.387, 0.700]
1st Year GPA	.152	.039	.236	3.908	.001***	[0.075, 0.229]
Gain better understanding of self+	-.134	.048	-.202	-2.800	.006**	[-0.228, -0.039]
Worked harder than you thought you could to meet an instructor's standards	.070	.031	.150	2.293	.023*	[0.010, 0.130]
SAT Verbal	.001	.000	.182	2.280	.024*	[0.000, 0.002]
Manage time+	-.102	.048	-.219	-2.117	.036*	[-0.197, -0.007]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.
+The 2004 Mapworks survey was reverse coded when compared to the academic and NSSE variables, so the direction of these statistics may be in error.

Table D56

Correlation Between Spirituality and Grit and Graduation GPA for 2005 Cohort (Supplement 2 to Research Question 2

Item	Grad GPA
Spirituality	
Religious activities	.084**
Discuss with students whose beliefs or values are different from yours	.062*
Develop own values and ethics	.004
Gain better understanding of yourself	.030
Grit	
Managing my time well	.055*
Rate: academic self-confidence	.214**
Rate: self-motivation	.172**
Rate: ability to set goals	.141**
Rate: manage time	.158**
Rate: get started on tasks	.147**
Rate: stick with tasks	.145**
Rate: complete tasks on time	.200**
Rate: ability to manage stress	.011
Develop independence	.050*

Notes. The 2005 Mapworks survey items are reverse coded when analyzed with the academic items, so in reporting these items the direction of correlation has been reversed to reflect this coding.
** $p \leq .01$; * $p \leq .05$.

Table D57

Models of Predictors to Grad GPA for 2005 Cohort (Supplement 2 to Research Question 2)

				Std.	Change Statistics				
Model	R	R square	Adj. R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Baseline	.639[a]	.408	.405	.32614	.408	127.408	6	1,108	.001***
Grit	.657[b]	.431	.421	.31733	.016	2.506	10	909	.006**
Spirituality	.641[c]	.411	.404	.32203	.002	.650	4	919	.627
Grit & Spirituality	.658[d]	.433	.420	.31879	.001	.418	4	.889	.796

Note: a. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath.

b. Predictors: (Constant), cum GPA at End of 1st Year, High School GPA, Student of Color, Gender, SATVerbal, SATMath, Managing my time well, Develop independence, Rate - ability to set goals, Rate - ability to manage stress, Rate - academic self-confidence, Rate - get started on tasks, Rate - complete tasks on time, Rate - self motivation, Rate - stick with tasks, Rate - manage time.

c. Predictors: (Constant), Student of Color, Gender, SATVerbal, cum GPA at End of 1st Year, High School GPA, SATMath, Develop own values and ethics, Discuss w students whose beliefs or values are different, Religious activities, Gain better understanding of self.

d. Predictors: (Constant), Student of Color, Gender, SATVerbal, cum GPA at End of 1st Year, High School GPA, SATMath, Develop independence, Rate - ability to set goals, Worked harder than you thought you could to meet an instructor's standards or expectations, Rate - ability to manage stress, Rate - academic self-confidence, Managing my time well, Rate - complete tasks on time, Rate - stick with tasks, Rate - self motivation, Rate - get started on tasks, Rate - manage time, Develop own values and ethics, Discuss w students whose beliefs or values are different, Religious activities, Gain better understanding of self.

*** $p \leq .001$; ** $p \leq .01$.

Table D58

Significant Variables Found Within Each Model for 2005 Cohort (Supplement 2 to Research Question 2)

Variable and Model	B	S.E	β	t	Sig.	95% CI
Baseline Model						
HS GPA	.443	.028	.449	15.906	.001***	[0.388, 0.497]
1st Year GPA	.181	.017	.250	10.773	.001***	[0.148, 0.214]
Gender	.102	.022	.118	4.676	.001***	[0.059, 0.144]
SAT Math	.001	.000	.129	3.998	.001***	[0.000, 0.001]
SAT Verbal	.000	.000	.089	3.017	.003***	[0.000, 0.001]
Grit Model						
HS GPA	.427	.031	.434	13.810	.001***	[0.366, 0.488]
1st Year GPA	.173	.018	.244	9.675	.001***	[0.138, 0.208]
SAT Math	.001	.000	.159	4.565	.001***	[0.000, 0.001]
Gender	.105	.025	.121	4.218	.001***	[0.056, 0.154]
Get started on tasks+	-.074	.021	-.148	-3.595	.001***	[-0.114, -0.033]
SAT Verbal	.000	.000	.075	2.324	.020*	[0.000, 0.001]
Complete tasks on time+	-.040	.019	-.077	-2.120	. 034*	[-0.078, -0.003]
Stick with tasks+	.039	.020	.077	1.943	.052*	[0.000, 0.078]
Spirituality Model						
HS GPA	.443	.030	.452	14.652	.001***	[0.384, 0.502]
1st Year GPA	.174	.018	.245	9.595	.001***	[0.138, 0.209]
SAT Math	.001	.000	.149	4.237	.001***	[0.000, 0.001]
Gender	.091	.025	.104	3.690	.001***	[0.042, 0.139]
SAT Verbal	.000	.000	.077	2.309	.021*	[0.000, 0.001]
Grit & Spirituality Model						
HS GPA	.425	.032	.431	13.491	.001***	[0.363, 0.487]
1st Year GPA	.174	.018	.244	9.556	.001***	[0.138, 0.210]
SAT Math	.001	.000	.161	4.590	.001***	[0.001, 0.001]^
Gender	.105	.025	.121	4.136	.001***	[0.055, 0.155]
Get started on tasks+	-.077	.021	-.152	-3.675	.001***	[-0.117, -0.036]
SAT Verbal	.000	.000	.081	2.398	.017*	[0.000, 0.001]
Complete tasks on time+	-.043	.019	-.081	-2.204	.028*	[-0.081, -0.005]
Stick with tasks+	.040	.020	.078	1.960	.050*	[0.000, 0.080]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.
+The 2005 Mapworks survey was reverse coded when compared to the academic and NSSE variables, so the direction of these statistics may be in error.
^Confidence interval is small enough to not show a difference to thousandths of a point.

Table D59

Correlation Between Spirituality and Grit and Graduation GPA for 2006 Cohort (Supplement 2 to Research Question 2

Item	Grad GPA
Spirituality	
Religious activities	.128**
Grit	
Is self-disciplined	.180**
Is a self-starter	.171**
Is reliable	.196**
Is dependable	.191**
Does work before play	.152**
Plans out time	.166**
Sticks to time plan	.126**
Ability to manage your time	.125**
Mapworks Factor: Commitment	.111**
Mapworks Factor: Self-confidence	.150**
Mapworks Factor: Self-evaluation	.134**

Note. ** $p \leq .01$.

Table D60

Models of Predictors to Grad GPA for 2006 Cohort (Supplement 2 to Research Question 2)

				Std.	Change Statistics				
Model	R	R square	Adj. R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Baseline	.687[a]	.473	.470	.32492	.473	177.521	6	1,189	.001***
Grit	.694[b]	.482	.473	.32464	.010	1.657	11	952	.078
Spirituality	.684[c]	.467	.464	.32474	.001	2.530	1	1,023	.112
Grit & Spirituality	.696[d]	.484	.474	.32424	.001	2.297	1	945	.130

Note: a. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath.
b. Predictors: (Constant), cum GPA at End of 1st Year, Gender, Student of Color, SATVerbal, High School GPA, SATMath, Ability to manage your time, MAP_2006_FTFY_F06_commit, Is dependable, MAP_2006_FTFY_F26_selfeval, Does work before play, MAP_2006_FTFY_F10_selfcomm, Is a self-starter, Sticks to time plan, Plans out time, Is self-disciplined, Is reliable.
c. Predictors: (Constant), cum GPA at End of 1st Year, Gender, Student of Color, SATVerbal, High School GPA, SATMath, Religious activities.
d. Predictors: (Constant), cum GPA at End of 1st Year, High School GPA, Student of Color, Gender, SATVerbal, SATMath, "Ability to manage your time", MAP_2006_FTFY_F06_commit, Is dependable, MAP_2006_FTFY_F26_selfeval, Does work before play, MAP_2006_FTFY_F10_selfcomm, Is a self-starter, Sticks to time plan, Plans out time, Is self-disciplined, Is reliable, Religious activities.
*** $p \leq .001$; ** $p \leq .01$.

Table D61

Significant Variables Found Within Each Model for 2006 Cohort (Supplement 2 to Research Question 2)

Variable and Model	B	S.E	β	t	Sig.	95% CI
Baseline Model						
HS GPA	.466	.025	.477	18.429	.001***	[0.417, 0.516]
1st Year GPA	.166	.016	.227	10.683	.001***	[0.136, 0.197]
SAT Verbal	.001	.000	.186	7.139	.001***	[0.001, 0.001]^
Gender	.110	.020	.122	5.423	.001***	[0.070, 0.150]
SAT Math	.000	.000	.071	2.458	.014**	[0.000, 0.001]
Grit Model						
HS GPA	.451	.029	.458	15.614	.001***	[0.394, 0.507]
1st Year GPA	.152	.017	.206	8.753	.001***	[0.118, 0.186]
SAT Verbal	.001	.000	.193	5.986	.001***	[0.001, 0.001]^
Gender	.134	.023	.147	5.774	.001***	[0.089, 0.180]
SAT Math	.000	.000	.083	2.586	.010**	[0.000, 0.001]
Spirituality Model						
HS GPA	.469	.027	.480	17.118	.001***	[0.415, 0.523]
1st Year GPA	.159	.017	.217	9.464	.001***	[0.126, 0.191]
SAT Verbal	.000	.000	.174	6.237	.001***	[0.001, 0.001]^
Gender	.115	.022	.128	5.231	.001***	[0.072, 0.159]
SAT Math	.000	.000	.072	2.331	.020*	[0.000, 0.001]
Grit & Spirituality Model						
HS GPA	.446	.029	.453	15.336	.001***	[0.389, 0.503]
1st Year GPA	.152	.017	.206	8.716	.001***	[0.117, 0.186]
SAT Verbal	.001	.000	.195	6.028	.001***	[0.001, 0.001]^
Gender	.130	.023	.143	5.581	.001***	[0.085, 0.176]
SAT Math	.000	.000	.081	2.529	.012**	[0.000, 0.001]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.
^ Confidence interval is small enough to not show a difference to thousandths of a point.

Table D62

Correlation Between Spirituality and Grit and Graduation GPA for 2007 Cohort (Supplement 2 to Research Question 2)

Item	Grad GPA
Spirituality	
Intend to be involved in religiously oriented groups or activities	-.030[3+]
Grit	
Is self-disciplined	-.025[3+]
Is a self-starter	-.030[3+]
Is reliable	-.034[3+]
Follows through with what you say you are going to do	-.040[3+]
Is dependable	-.039[3+]
Does your work before play	-.033[3+]
Plans out your time	-.024[3+]
Sticks to your time plan	-.038[3+]
Do even the hardest work assigned in your classes	-.039[3+]
Persevere on class projects even when there are challenges	-.026[3+]
Spends sufficient time studying to earn the grades you want	-.027[3+]

Notes. ** $p \leq .01$; * $p \leq .05$.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [3] = $p \leq .01$; [+] = Change in correlational direction.

Table D63

Models of Predictors to Grad GPA for 2007 Cohort (Supplement 2 to Research Question 2)

				Std.	Change Statistics				
Model	R	R square	Adj. R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Baseline	.651[a]	.424	.422	.32255	.424	216.556	6	1,767	.001***
Grit	.674[b]	.454	.442	.30748	.041	5.088	11	751	.001***
Spirituality	.659[c]	.434	.431	.31865	.001	2.163	1	1,549	.142
Grit & Spirituality	.674[d]	.454	.441	.30823	.001	.753	1	743	.386

Notes: a. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath.

b. Predictors: (Constant), cum GPA at End of 1st Year, Gender, Student of Color, SATVerbal, High School GPA, SATMath, Is a self-starter:, To what degree are you spending sufficient time studying to earn the grades you want?, Do even the hardest work assigned in your classes:, Sticks to your time plan:, Plans out your time:, Is dependable:, Persevere on class projects even when there are challenges, Does your work before play:, Is self-disciplined:, Follows through with what you say you are going to do:, Is reliable.

c. Predictors: (Constant), cum GPA at End of 1st Year, Gender, Student of Color, SATVerbal, High School GPA, SATMath, Religious - religiously oriented groups or activities.

d. Predictors: (Constant), cum GPA at End of 1st Year, Gender, Student of Color, SATVerbal, High School GPA, SATMath, Is a self-starter:, To what degree are you spending sufficient time studying to earn the grades you want?, Do even the hardest work assigned in your classes:, Sticks to your time plan:, Plans out your time:, Is dependable:, Persevere on class projects even when there are challenges, Does your work before play:, Is self-disciplined:, Follows through with what you say you are going to do:, Is reliable:, Religious - religiously oriented groups or activities.

*** $p \leq .001$.

Table D64

Significant Variables Found Within Each Model for 2007 Cohort (Supplement 2 to Research Question 2)

Variable and Model	B	S.E	β	t	Sig.	95% CI
Baseline Model						
HS GPA	.438	.020	.459	21.598	.001***	[0.399, 0.478]
1st Year GPA	.184	.013	.262	14.361	.001***	[0.159, 0.209]
Gender	.118	.017	.137	7.107	.001***	[0.085, 0.151]
SAT Verbal	.001	.000	.142	6.485	.001***	[0.001, 0.001]^
SAT Math	.001	.000	.102	4.298	.001***	[0.000, 0.001]
Student of Color	-.109	.032	-.061	-3.391	.001***	[-0.173, -0.046]
Grit Model						
HS GPA	.382	.031	.413	12.167	.001***	[0.320, 0.444]
1st Year GPA	.133	.019	.188	6.844	.001***	[0.095, 0.172]
Spending sufficient time studying to earn the grades you want	.064	.011	.178	6.070	.001***	[0.043, 0.085]
Gender	.132	.027	.147	4.955	.001***	[0.080, 0.185]
SAT Verbal	.001	.000	.134	4.057	.001***	[0.000, 0.001]
SAT Math	.001	.000	.142	3.900	.001***	[0.000, 0.001]
Is self-disciplined	.034	.015	.690	2.294	.022*	[0.005, 0.064]
Spirituality Model						
HS GPA	.456	.022	.481	21.076	.001***	[0.413, 0.498]
1st Year GPA	.176	.014	.251	13.037	.001***	[0.150, 0.203]
Gender	.125	.018	.144	7.067	.001***	[0.090, 0.159]
SAT Verbal	.001	.000	.128	5.490	.001***	[0.000, 0.001]
SAT Math	.000	.000	.092	3.642	.001***	[0.000, 0.001]
Student of Color	-.118	.035	-.064	-3.335	.001***	[-0.187, -0.049]
Grit & Spirituality Model						
HS GPA	.381	.032	.412	12.061	.001***	[0.319, 0.443]
1st Year GPA	.134	.020	.190	6.851	.001***	[0.096, 0.173]
Spending sufficient time studying to earn the grades you want	.063	.011	.175	5.943	.001***	[0.042, 0.084]
Gender	.135	.027	.150	5.027	.001***	[0.082, 0.188]
SAT Verbal	.001	.000	.137	4.119	.001***	[0.000, 0.001]
SAT Math	.001	.000	.144	3.917	.001***	[0.000, 0.001]
Is self-disciplined	.034	.015	.689	2.268	.024*	[0.005, 0.064]

Notes. CI = Confidence interval, lower and upper limits.

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.

^ Confidence interval is small enough to not show a difference to thousandths of a point.

Table D65

Correlation Between Spirituality and Grit and Graduation GPA for 2008 Cohort (Supplement 2 to Research Question 2)

Item	Survey Year	Grad GPA
Spirituality		
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	NSSE	.203**
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Understanding yourself	NSSE	.061
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics	NSSE	.052
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality	NSSE	.032

Note. ** $p \leq .01$.

Table D65 (Cont.)

Correlation Between Spirituality and Grit and Graduation GPA for 2008 Cohort (Research Question 2)

Item	Survey Year	Grad GPA
Grit		
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	.161**
	FTSO	.227**
Is a self-starter	FTFY	.145**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	FTFY	.120**
	FTSO	.171**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	.122**
	FTSO	.139**
Does work before play	FTFY	.141**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	.150**
	FTSO	.175**
Sticks to time plan	FTFY	.112**
Do even the hardest work assigned in your classes	FTFY	.104**
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTFY	.111**
	FTSO	.180**
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	.144**
	FTSO	.185**
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn the grades you want	FTFY	.192**
	FTSO	.222**
Motivated to complete your academic work	FTFY	.093**
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	NSSE	-.023

Notes. FTFY = First Time Freshman Year; FTSO = First Time Sophomore.
** $p \leq .01$.

Table D66

Models of Predictors to Grad GPA for 2008 Cohort (Supplement 2 to Research Question 2)

				Std. Error of	Change Statistics				
Model	R	R square	Adj. R Square	the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Baseline	.675[a]	.456	.454	.31346	.456	255.590	6	1,829	.001***
Grit	.732[b]	.536	.496	.26582	.033	1.092	19	294	.358
Spirituality	.680[c]	.463	.452	.27570	.009	1.949	4	478	.101
Grit & Spirituality	.729[d]	.532	.482	.26972	.004	.621	4	271	.648

Notes: a. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath.

b. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, High School GPA, SATVerbal, SATMath, Motivated to complete your academic work, MAP_2009_FTSO_Q020, Worked harder than you thought you could to meet an instructor's standards or expectations, Is dependable:, MAP_2009_FTSO_Q040, Do even the hardest work assigned in your courses, MAP_2009_FTSO_Q022, Spends sufficient time studying to earn good grades, Is self-disciplined:, Follows through with what you say you are going to do:, Plans out your time:, MAP_2009_FTSO_Q019, Does your work before play:, Persevere on class projects even when there are challenges, MAP_2009_FTSO_Q018, MAP_2009_FTSO_Q039, Do well in your hardest course, Is a self-starter:, Sticks to your time plan.

c. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, SATVerbal, High School GPA, SATMath, Institutional contribution: Developing a deepened sense of spirituality, Institutional contribution: Understanding yourself, Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.), Institutional contribution: Developing a personal code of values and ethics.

d. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, High School GPA, SATVerbal, SATMath, Motivated to complete your academic work, MAP_2009_FTSO_Q020, Worked harder than you thought you could to meet an instructor's standards or expectations, Is dependable:, MAP_2009_FTSO_Q040, Do even the hardest work assigned in your courses, MAP_2009_FTSO_Q022, Spends sufficient time studying to earn good grades, Follows through with what you say you are going to do:, Is self-disciplined:, Plans out your time:, MAP_2009_FTSO_Q019, Does your work before play:, Persevere on class projects even when there are challenges, MAP_2009_FTSO_Q018, MAP_2009_FTSO_Q039, Do well in your hardest course, Is a self-starter:, Sticks to your time plan:, Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.), Institutional contribution: Understanding yourself, Institutional contribution: Developing a deepened sense of spirituality, Institutional contribution: Developing a personal code of values and ethics.

*** $p \leq .001$.

Table D67

Significant Variables Found Within Each Model for 2008 Cohort (Supplement 2 to Research Question 2)

Variable and Model	B	S.E	β	t	Sig.	95% CI
Baseline						
HS GPA	.444	.020	.449	22.055	.001***	[0.405, 0.483]
1st Year GPA	.167	.012	.238	13.731	.001***	[0.144, 0.191]
Gender	.153	.016	.176	9.617	.001***	[0.122, 0.184]
SAT Verbal	.001	.000	.178	8.487	.001***	[0.001, 0.001]^
SAT Math	.001	.000	.120	5.319	.001***	[0.000, 0.001]
Grit Model						
HS GPA	.403	.050	.424	8.118	.001***	[0.306, 0.501]
SAT Verbal	.001	.000	.281	5.290	.001***	[0.001, 0.002]
1st Year GPA	.134	.026	.219	5.218	.001***	[0.084, 0.185]
Gender	.121	.037	.149	3.275	.001***	[0.048, 0.194]
Spirituality Model						
HS GPA	.383	.037	.423	10.455	.001***	[0.311, 0.455]
SAT Verbal	.001	.000	.261	6.294	.001***	[0.001, 0.002]
1st Year GPA	.126	.021	.207	6.034	.001***	[0.085, 0.168]
Gender	.133	.028	.169	4.749	.001***	[0.078, 0.188]
Developing a personal code of values and ethics	.041	.017	.105	2.397	.017*	[0.007, 0.075]
SAT Math	.000	.000	.104	2.300	.022*	[0.000, 0.001]
Grit & Spirituality Model						
HS GPA	.415	.053	.432	7.777	.001***	[0.310, 0.519]
SAT Verbal	.001	.000	.282	5.078	.001***	[0.001, 0.002]
1st Year GPA	.135	.027	.224	5.047	.001***	[0.083, 0.188]
Gender	.117	.039	.144	3.014	.003***	[0.040, 0.193]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.
^ Confidence interval is small enough to not show a difference to thousandths of a point

Table D68

Correlation Between Spirituality and Grit and Graduation GPA for 2009 Cohort (Supplement 2 to Research Question 2)

Item	Survey Year	Grad GPA
Spirituality		
No survey items inquired about student spirituality or values for this cohort.		
Grit		
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	.196**
	FTSO	.049[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you are going to do	FTFY	.147**
	FTSO	.037[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	.168**
	FTSO	.001[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	.183**
	FTSO	.047[3]
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTSO	.054[3]
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	.140**
	FTSO	.039[3]
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	FTFY	.204**
	FTSO	.038[3]

Notes. FTFY = First Time Freshman Year; FTSO = First Time Sophomore.
** $p \leq .01$.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [3] = $p \leq .01$.

Table D69

Models of Predictors to Grad GPA for 2009 Cohort (Supplement 2 to Research Question 2)

				Std.	Change Statistics				
Model	R	R square	Adj. R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Baseline	.831[a]	.690	.689	.23886	.690	760.686	6	2,051	.001***
Grit	.837[b]	.701	.694	.23442	.006	1.204	13	816	.271
Spirituality	No Spirituality variable were available for this cohort, so these analyses were not done.								
Grit & Spirituality									

Notes: a. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath.

b. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, High School GPA, SATVerbal, SATMath, Motivated to complete your academic work, MAP_2009_FTSO_Q020, Worked harder than you thought you could to meet an instructor's standards or expectations, Is dependable:, MAP_2009_FTSO_Q040, Do even the hardest work assigned in your courses, MAP_2009_FTSO_Q022, Spends sufficient time studying to earn good grades, Is self-disciplined:, Follows through with what you say you are going to do:, Plans out your time:, MAP_2009_FTSO_Q019, Does your work before play:, Persevere on class projects even when there are challenges, MAP_2009_FTSO_Q018, MAP_2009_FTSO_Q039, Do well in your hardest course, Is a self-starter:, Sticks to your time plan. Predictors: (Constant), cum GPA at End of 1st Year, Gender, Student of Color, SATVerbal, SATMath, High School GPA, MAP_2010_FTSO_Q020, MAP_2009_FTFY_Q020, MAP_2009_FTFY_Q041, MAP_2009_FTFY_Q022, MAP_2010_FTSO_Q040, MAP_2009_FTFY_Q047, MAP_2009_FTFY_Q018, MAP_2009_FTFY_Q019, MAP_2010_FTSO_Q022, MAP_2010_FTSO_Q047, MAP_2010_FTSO_Q018, MAP_2010_FTSO_Q041, MAP_2010_FTSO_Q019.

*** $p \leq .001$.

Table D70

Significant Variables Found Within Each Model for 2009 Cohort (Supplement 2 to Research Question 2)

Variable and Model	B	S.E	β	t	Sig.	95% CI
Baseline Model						
1st Year GPA	.607	.014	.703	43.675	.001***	[0.580, 0.634]
HS GPA	.135	.017	.133	8.032	.001***	[0.102, 0.167]
Gender	.090	.012	.103	7.670	.001***	[0.067, 0.112]
Grit						
1st Year GPA	.632	.023	.734	27.634	.001***	[0.587, 0.677]
Gender	.075	.019	.081	3.826	.001***	[0.036, 0.113]
HS GPA	.093	.028	.090	3.333	.001***	[0.038, 0.147]
Persevere on class projects even when there are challenges (FTFY)	-.019	.009	-.048	-2.091	.037*	[-0.036, -0.001]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; * $p \leq .05$.
FTFY = First Time Freshman Year.

Table D71

Correlation Between Spirituality and Grit and Graduation GPA for 2010 Cohort (Supplement 2 to Research Question 2

Item	Grad GPA
Spirituality	
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	.098
What are your perceived gains? Developing or clarifying a personal code of values and ethics	-.027
Grit	
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	.013[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	-.006[3+]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	-.032[3+]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	.006[3]
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	-.056*[1]
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	-.034
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	-.004[3+]

Notes. * $p \leq .05$.

Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [1] = No Significance; [2] = $p \leq .05$; [3] = $p \leq .01$; [+] = Change in correlational direction.

Table D72

Models of Predictors to Grad GPA for 2010 Cohort (Supplement 2 to Research Question 2)

				Std.	Change Statistics				
Model	R	R square	Adj. R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Baseline	.810[a]	.655	.654	.25411	.655	590.076	6	1,862	.001***
Grit	.805[b]	.648	.645	.25445	.003	1.992	7	1,595	.053*
Spirituality	.810[c]	.656	.525	.27767	.005	.142	2	21	.869
Grit & Spirituality	.891[d]	.794	.513	.28364	.003	.071	2	11	.932

Notes: a. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath.
b. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, SATVerbal, SATMath, High School GPA, MAP_2010_FTFY_Q047, MAP_2010_FTFY_Q041, MAP_2010_FTFY_Q020, MAP_2010_FTFY_Q040, MAP_2010_FTFY_Q022, MAP_2010_FTFY_Q019, MAP_2010_FTFY_Q018.
c. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, High School GPA, SATMath, SATVerbal, Had discussions with people with religious beliefs other than your own, Perceived gains: Developing or clarifying a personal code of values and ethics.
d. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, High School GPA, SATVerbal, SATMath, MAP_2010_FTFY_Q018, MAP_2010_FTFY_Q040, MAP_2010_FTFY_Q041, MAP_2010_FTFY_Q022, MAP_2010_FTFY_Q020, MAP_2010_FTFY_Q047, MAP_2010_FTFY_Q019, Perceived gains: Developing or clarifying a personal code of values and ethics, Had discussions with people with religious beliefs other than your own.
*** $p \leq .001$; * $p \leq .05$.

Table D73

Significant Variables Found Within Each Model for 2010 Cohort (Supplement 2 to Research Question 2)

Variable and Model	B	S.E	β	t	Sig.	95% CI
Baseline Model						
1st Year GPA	.614	.016	.698	39.140	.001***	[0.584, 0.645]
HS GPA	.137	.020	.127	6.970	.001***	[0.098, 0.175]
Gender	.065	.013	.073	4.937	.001***	[0.039, 0.091]
Student of Color	-.050	.021	-.033	-2.436	.015*	[-0.091, -0.010]
Grit Model						
1st Year GPA	.602	.017	.683	34.936	.001***	[0.568, 0.636]
HS GPA	.141	.021	.131	6.586	.001***	[0.099, 0.183]
Gender	.063	.015	.071	4.316	.001***	[0.034, 0.092]
Is self-disciplined	.021	.008	.203	2.606	.009**	[0.005, 0.036]
Student of Color	-.055	.022	-.037	-2.466	.014**	[-0.099, -0.011]
Spirituality Model						
1st Year GPA	.480	.131	.668	3.674	.001***	[0.208, 0.751]
Grit & Spirituality Model						
1st Year GPA	.533	.215	.712	2.473	.031*	[0.059, 1.007]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$.

Table D74

Correlation Between Spirituality and Grit and Graduation GPA for 2011 Cohort (Supplement 2 to Research Question 2)

Item	Grad GPA
Spirituality	
During the current school year, about how often have you done each of the following: Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	.145**
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Understanding yourself	.014
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a personal code of values and ethics	-.012
To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? Developing a deepened sense of spirituality	.055
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	-.055
Perceived gains? Developing or clarifying a personal code of values and ethics	.035

Note. ** $p \leq .01$.

Table D74 (Cont.)

Correlation Between Spirituality and Grit and Graduation GPA for 2011 Cohort (Supplement 2 to Research Question 2

Item	Grad GPA
Grit	
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	-.005[3+]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	.023[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	.014[3]
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	.030[3]
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	-.005[3+]
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	-.025[3+]
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	-.008[3+]
In your experience at your institution during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations	.076*

Notes. * $p \leq .05$.
Superscripts show where changes in significance occurred between the Pearson's and Non-Parametric correlational analyses. [3] = $p \leq .01$; [+] = Change in correlational direction.

Table D75

Models of Predictors to Grad GPA for 2011 Cohort (Supplement 2 to Research Question 2)

				Std. Error of	Change Statistics				
Model	R	R square	Adj. R Square	the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Baseline	.838[a]	.703	.702	.23067	.703	736.437	6	1,871	.001***
Grit	.852[b]	.725	.718	.21635	.008	1.999	8	534	.045*
Spirituality	.838[c]	.702	.660	.19475	.030	1.430	6	86	.212
Grit & Spirituality	.853[d]	.728	.650	.19302	.022	.949	6	70	.466

Notes: a. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath.

b. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, SATVerbal, SATMath, High School GPA, MAP_2011_FTFY_Q040, MAP_2011_FTFY_Q019, Worked harder than you thought you could to meet an instructor's standards or expectations, MAP_2011_FTFY_Q047, MAP_2011_FTFY_Q022, MAP_2011_FTFY_Q018, MAP_2011_FTFY_Q020, MAP_2011_FTFY_Q041.

c. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, SATMath, SATVerbal, High School GPA, Institutional contribution: Developing a personal code of values and ethics, Had discussions with people with religious beliefs other than your own, Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.), Perceived gains: Developing or clarifying a personal code of values and ethics, Institutional contribution: Developing a deepened sense of spirituality, Institutional contribution: Understanding yourself.

d. Predictors: (Constant), cum GPA at End of 1st Year, Student of Color, Gender, SATMath, SATVerbal, High School GPA, MAP_2011_FTFY_Q047, Worked harder than you thought you could to meet an instructor's standards or expectations, MAP_2011_FTFY_Q041, MAP_2011_FTFY_Q020, MAP_2011_FTFY_Q018, MAP_2011_FTFY_Q022, MAP_2011_FTFY_Q040, MAP_2011_FTFY_Q019, Institutional contribution: Developing a personal code of values and ethics, Perceived gains: Developing or clarifying a personal code of values and ethics, Institutional contribution: Developing a deepened sense of spirituality, Had discussions with people with religious beliefs other than your own, Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.), Institutional contribution: Understanding yourself.

*** $p \leq .001$; * $p \leq .05$.

Table D76

Significant Variables Found Within Each Model for 2011 Cohort (Supplement 2 to Research Question 2)

Variable and Model	B	S.E	β	t	Sig.	95% CI
Baseline Model						
1st Year GPA	.641	.014	.743	45.202	.001***	[0.613, 0.668]
Gender	.061	.012	.070	5.257	.001***	[0.038, 0.084]
HS GPA	.090	.018	.087	5.132	.001***	[0.056, 0.124]
Student of Color	-.083	.018	-.060	-4.717	.001***	[-0.118, -0.049]
Grit Model						
1st Year GPA	.695	.028	.803	24.845	.001***	[0.640, 0.750]
Follows through with what you say you are going to do	.044	.014	.103	3.205	.001***	[0.017, 0.071]
Is dependable	-.033	.015	-.065	-2.185	.029*	[-0.063, -0.003]
Student of Color	-.070	.034	-.049	-2.079	.038*	[-0.137, -0.004]
Spirituality Model						
1st Year GPA	.688	.083	.845	8.241	.001***	[0.522, 0.854]
Perceived gains: Developing a personal code of values and ethics	.044	.022	.131	1.991	.050*	[0.000, 0.089]
Grit & Spirituality Model						
1st Year GPA	.680	.094	.840	7.215	.001***	[0.492, 0.867]
Follows through with what you say you are going to do	.087	.039	.248	2.213	.030*	[0.009, 0.165]
Is dependable	-.081	.039	-.204	-2.060	.043*	[-0.159, -0.003]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; * $p \leq .05$.

Table D77

Correlation Between Spirituality and Grit and Graduation GPA for 2012 Cohort (Supplement 2 to Research Question 2

Item	Survey Year	Grad GPA
Spirituality		
During the current school year, about how often have you had discussions with people from the following groups? People with religious beliefs other than your own	NSSE 2015	.067
Perceived gains? Developing or clarifying a personal code of values and ethics	NSSE 2015	.329
Grit		
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined	FTFY	.146**
	FTSO	.210**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you're going to do	FTFY	.119**
	FTSO	.104**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable	FTFY	.120**
	FTSO	.094**
Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time	FTFY	.123**
	FTSO	.232**
Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course	FTFY	.116**
	FTSO	.186**
Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges	FTFY	.119**
	FTSO	.199**
Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades	FTFY	.237**
	FTSO	.350**

Notes. ** $p \leq .01$.
FTFY = First Time Freshman Year; FTSO = First Time Sophomore.

Table D78

Models of Predictors to Grad GPA for 2012 Cohort (Supplement 2 to Research Question 2)

				Std.	Change Statistics				
Model	R	R square	Adj. R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Baseline	.838[a]	.702	.701	.21310	.702	519.782	6	1,321	.001***
Grit	.840[b]	.706	.697	.20658	.008	1.219	14	603	.256
Spirituality									
Grit & Spirituality	Missing too many responses to run these analyses.								

Note: a. Predictors: (Constant), Student of color, Gender, cum GPA at End of 1st Year, High School GPA, SATVerbal, SATMath.

b. Predictors: (Constant), cum GPA at End of 1st Year, recoded gender, Student of Color, SATVerbal, SATMath, High School GPA, MAP_2012_FTFY_S1_S1_Q019, Academic Self-Efficacy - To what degree are you certain that you can: Persevere on class projects even when there are challenges , MAP_2012_FTFY_S1_S1_Q040, Self-Assessment of Management Skills - To what degree are you the kind of person who: Plans out your time , Self-Assessment of Management Skills - To what degree are you the kind of person who: Is dependable , MAP_2012_FTFY_S1_S1_Q047, Academic Behaviors - To what degree are you the kind of person who: Spends sufficient study time to earn good grades , MAP_2012_FTFY_S1_S1_Q018, MAP_2012_FTFY_S1_S1_Q022, MAP_2012_FTFY_S1_S1_Q041, Academic Self-Efficacy - To what degree are you certain that you can: Do well in your hardest course , Self-Assessment of Management Skills - To what degree are you the kind of person who: Is self-disciplined , Self-Assessment of Management Skills - To what degree are you the kind of person who: Follows through with what you say you are going to do , MAP_2012_FTFY_S1_S1_Q020.

*** $p \leq .001$.

Table D79

Significant Variables Found Within Each Model for 2012 Cohort (Supplement 2 to Research Question 2)

Variable and Model	B	S.E	β	t	Sig.	95% CI
Baseline Model						
1st Year GPA	.629	.017	.731	38.011	.001***	[0.597, 0.662]
HS GPA	.121	.019	.132	6.508	.001***	[0.085, 0.158]
Gender	.047	.013	.058	3.599	.001***	[0.021, 0.073]
Student of Color	-.067	.019	-.054	-3.547	.001***	[-0.105, -0.030]
Grit						
1st Year GPA	.662	.026	.750	25.303	.001***	[0.611, 0.714]
HS GPA	.096	.027	.101	3.534	.001***	[0.043, 0.150]
Gender	.043	.020	.052	2.154	.032*	[0.004, 0.082]
Student of Color	-.058	.028	-.048	-2.071	.039*	[-0.114, -0.003]
Persevere on class projects even when there are challenges	.024	.012	.064	1.983	.048*	[0.000, 0.048]

Notes. CI = Confidence interval, lower and upper limits.
*** $p \leq .001$; * $p \leq .05$.

Table D80

Seniors Who Attributed their Persistence to Graduation to Grit and/or Spirituality (Research Question 3) (N = 1,089)

Item	*N*	% of Total	% Rank in Top 3
Sense of life purpose	*175*	16.1	58.2
Identity development	*174*	16.0	62.0
Identifying values	*169*	15.5	52.7
Grit	*96*	8.8	58.2
Self-Authorship	*91*	8.4	39.7
Spiritual or religious growth	*88*	8.1	62.0
Spiritual mentor	*31*	2.8	47.8
Life coach mentor	*11*	1.0	50.0

Table D81

Quotes from Seniors Who Attributed their Persistence to Graduation to Grit and/or Spirituality (Research Question 3)

Grit*
I've gone through some rough patches. . . . But I stuck with it. . . . Academically, I struggled. . . . So, when my final semester came, I threw everything I had learned into overdrive and tried to do my best, hoping to finish the classes strong. . . . Life is full of ups and downs, but I don't regret my coming to Ball State.
It was always a struggle for me to find a way to make my education exactly what I wanted. . . . The biggest thing I learned is that I can't rely on an institution to teach me. Ultimately, it is up to myself and I tried to make Ball State fit to what I wanted out of it.
Most of my growth and development has been because of my own initiative. I found all of my internships and grew from personal experiences.
I will remember this experience for the rest of my life. I may have had some rough times along the way but I made it and I am proud to call myself a Ball State graduate.
Overall, just within my program, I have had to take my education into my own hands.
Even though I experienced many hardships along the way, I am proud to have been a student at Ball State.
I do believe my time during my undergraduate degree has morphed me into a mature and articulated adult, however, I believe that that is based on my own personal investment.
I attended Ball State 1985-87; then raised a family while working in the workforce for 21 of 25 years since then. I completed 2 full-time years (57 credit hours) in 2.6 part-time years (as I took off a summer and two 5 weeks sessions due to the change to the SSB registration between 9/2010 and 7/2013). I took my last two years entirely on-line.
For me, college has been a rough few years. Life hit me with some hard things throughout this time. . . . Six and a half years of college was not what I planned for myself. I am on a completely different path than I would have chosen.
I feel like I've basically had to do everything on my own to reach graduation.
As a homeless minority student I felt like there was little support. I lived in my car for half of my education and barely ate. I am finally making it but with the hairs on my chin. I had no outside support and I'm the first generation to complete high school and go to college. It tore my spirits but I made it through to graduation by my own will.

Note: All comments are taken verbatim from survey entries and have not been edited for spelling or grammatical errors. Where applicable, names of individuals have been redacted.

Table D81 (Cont.)

Quotes from Seniors Who Attributed their Persistence to Graduation to Grit and/or Spirituality (Research Question 3)

Grit*
My college career (this time around) was as a distance student and I worked an average of 50 hours per week.
I became pregnant and delivered a 6 week premature baby while attending ball state. I never took time off during this, and went through full time, the whole 4 years.
I am a non-traditional student. I attended four years of college previously, however, due to family issues, did not end up completing my degree. I work full-time and we have five very active children.
First, I should note that I am a student who has always taken my education seriously and strived for the best grades. I attribute most of my work ethic to my parents and my personality.
I grew more as a person during my time at Ball State, thanks to myself, not the faculty.
Despite some of my setbacks, I felt I succeeded at Ball State and had many accomplishments to be proud of.
My college experience and post graduation success were accomplished through my own perseverance and determination to excel.
I completed my associates degree in general studies in 2004. I was able to complete my original bachelor's degree in Business Administration in the last two years entirely online. It has been a huge challenge and I was able to succeed! Thank you Ball State!
My time at Ball State has been filled with failure. But I have learned from those failures and am now better prepared for life because of them. Thank you.

Note: All comments are taken verbatim from survey entries and have not been edited for spelling or grammatical errors. Where applicable, names of individuals have been redacted.

Table D81 (Cont.)

Quotes from Seniors Who Attributed their Persistence to Graduation to Grit and/or Spirituality (Research Question 3)

Spirituality*
I Thank God for the opportunity to attend Ball State University for the past three years! I have grown closer to Him spiritually as He surrounded me around people of God. . . . I Thank God for the knowledge that I have gained here and know one can take that away.
My time here has given the opportunity to grow academically, intellectually, and spiritually.
I involved myself with on campus activities and events, coming out of my shell and finding out who I was and what I believed in.
I have learned so much and grown so much as a person, and that didn't always happen by virtue of the staff. But without the university attracting so many unique, diverse, and open-minded individuals, I would have missed out on an abundance of important life lessons.
I have grown so much as a person, in my faith, in cultural diversity, in acceptance of people for their difference, in my finances, and just as an individual.
I have learned more about myself and how to work with others than I ever had previously, and for that I am forever greatful. Ball State is the perfect place to come and discover who you really want to be and explore all the options you have.
Freshman year was filled with new friendships, redeveloping my identity apart from home, and receiving a rude awakening that the real world is much more than what I originally thought. . . . Over the years I have developed my own identity and discovered who I am and who I want to be in my future career.
. . . the natural process of reaching a higher level of maturity and understanding that happens on an individual basis.
I learned a lot about myself, who I am, and who I want to be.
While I do wish some things were different, I am overall quite grateful for my experience here at Ball State. GOD is good.

Note: All comments are taken verbatim from survey entries and have not been edited for spelling or grammatical errors. Where applicable, names of individuals have been redacted.